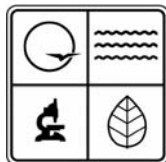


MISSOURI SOLID WASTE MANAGEMENT PLAN



Missouri Department of Natural Resources



November, 2005

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I. Introduction

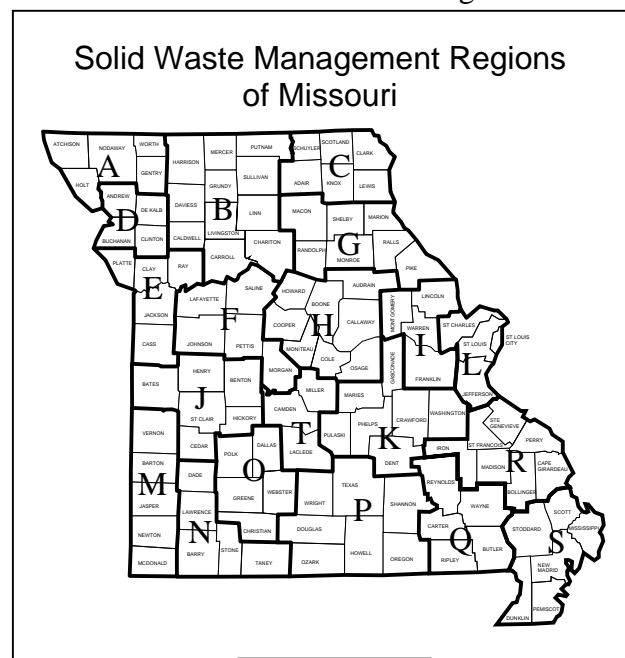
Protecting human health and the environment is a job that is never finished. An unpolluted environment provides the clean air and clean water necessary for maintaining good health and human prosperity. A flourishing environment also provides food and raw materials to sustain life and offers recreational opportunities that can enhance the well being of individuals. Improper management of solid waste can lead to pollution of the air, land and water and contribute to the spread of disease. The Missouri Department of Natural Resources is charged with a number of duties and responsibilities to help ensure that solid waste is managed in a way that protects both public health and the environment. (Appendix A) While development of a statewide plan is one of these responsibilities, the department also believes that good planning is the foundation for carrying out any successful endeavor.

Since waste is an issue affecting all Missourians, it is our belief that the plan should include viewpoints from a broad range of stakeholders. Having input from Missouri stakeholders produces a stronger plan and establishes a better basis for policy and action. The department incorporated into the plan input from a large number of stakeholders representing private citizens, business and industry, and state and local government. It was also clear that new strategies were needed to strengthen the traditional programs that have been effective in the past. New strategies must balance the demands of society, the environment and the economy.

One of the plan's most important functions is to provide a common basis for the governor, legislators, districts, communities and the department to make decisions regarding waste management programs and the resources needed to turn the plan into reality.

By no means is this plan meant to displace or diminish past efforts. Investments in waste management alternatives initiated in the past have increased the potential for continued stewardship into the future. It would be remiss not to mention some of the waste management accomplishments the state has realized over the past decade. In 1990, a major revision was made to the Missouri Solid Waste Management Law in Senate Bill 530. The law set a goal to divert 40 percent of the waste stream from landfill disposal that has been achieved. The law also created 20 solid waste management districts across the state to foster regional cooperation among cities and counties to help achieve the diversion goal. (Appendix B) The districts have played a significant role in the development of a statewide recycling infrastructure.

Educational efforts have helped encourage Missourians to recycle. This has contributed to the increase in the number and variety of reuse and recycling services available statewide.



Improved awareness and a sense of responsibility in all sectors are fundamental to reducing waste generation and management. That is why it is important to now focus on the implementation of this plan. There are roles and responsibilities for citizens, government and businesses alike to take part in. In order for this plan to succeed, it will be necessary for all parties to cooperate and be actively engaged in each of their respective tasks.

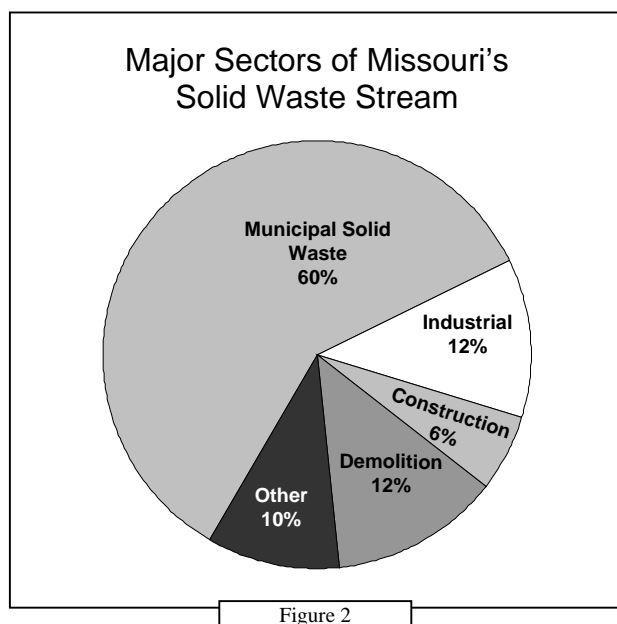
Trash represents the discards of our human existence. Finding ways to capture these castoffs as resources and put them to their best and highest use for society is our challenge. Thank you for sharing our commitment to environmental excellence, and to making Missouri a better place to live, work, and visit.

A. The Planning Process

In describing the process followed in development of this plan, it is important to emphasize that planning *is* a process. Compiling an array of background information and stakeholder input into this document involved several phases of activity, discussed below. However, the factors affecting how we manage solid waste are constantly changing: population growth and migration, economic conditions, solid waste industry consolidation, recycling market fluctuations and landfill technology, to name a few. Recognizing that these factors will never be completely static, the department endeavored to put on paper all of the information and input available to date to create this document and will continue to engage stakeholders in a process of solid waste planning and implementation.

1. Building the Foundation

The development of the plan should be built on a solid base: data from characterizations of the types and amounts of materials in the solid waste stream; information about the disposal, recycling and other resource recovery services in the state; surveys of citizens regarding their knowledge and attitudes about waste management; and input from a wide range of Missouri stakeholders.



a. The Solid Waste Stream

Waste characterization studies are key planning tools, particularly for determining areas of the waste stream that need additional attention. The Midwest Assistance Program, Inc. conducted a two-phase Missouri Waste Composition Study from 1996 to 1999, funded by the Solid Waste Management Fund. (Appendix C) The first phase defined what and how much waste goes into the municipal solid waste stream--residences, schools, small businesses and other commercial activities. The second phase looked at construction and demolition, industrial, commercial and other wastes. Based on these studies, approximately

60 percent of Missouri's solid waste is created by homes and businesses, with significant portions generated by industries, construction and demolition activities.

Each year the department estimates the total amount of solid waste generated by all of these sectors. Data is compiled from Missouri landfill and transfer station tonnage reports, reports from other states and surveys of landfills in neighboring states. While diversion has increased, generation also continues to rise and the department's most recent estimates indicate nearly

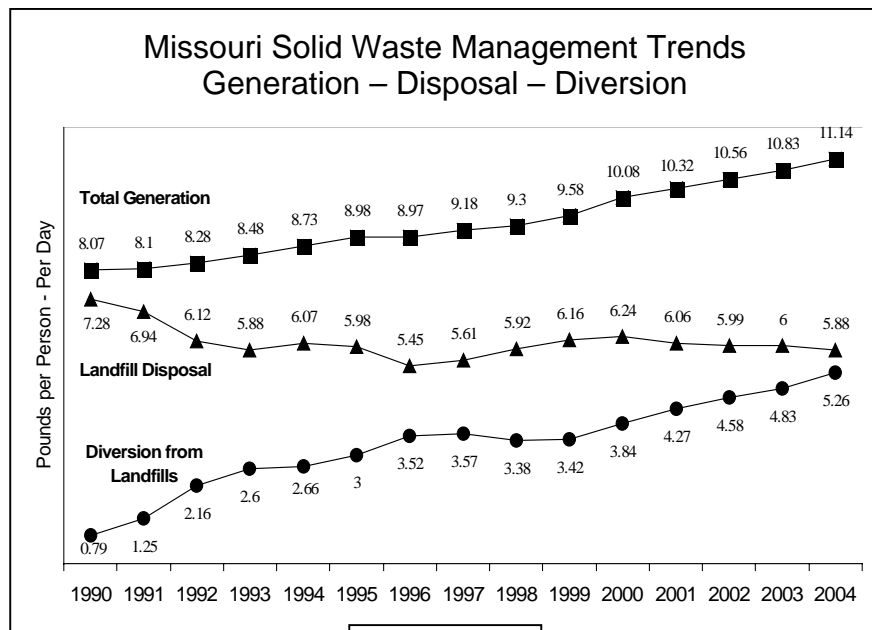
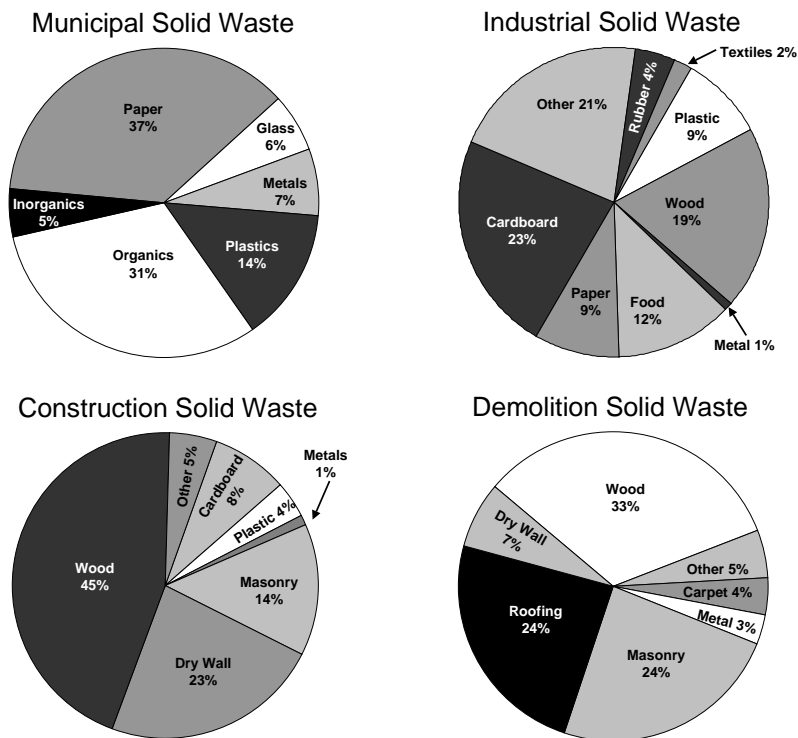


Figure 3

Missouri Solid Waste Stream Major Components of Four Waste Sectors



Based on Missouri Solid Waste Composition Study, 1996-1998
Midwest Assistance Program Inc.

Figure 4

six million tons of solid waste continue to end up in landfills each year. (Figure 3)

Understanding what's in the waste stream is also important. The waste composition studies also looked at the character of the major waste sectors. (Figure 4) This information helps to plan programs that focus on materials that dominate each waste stream.

b. Management Methods

To help lay the groundwork for plan development, the department conducted a review of how solid waste has been managed in Missouri. This review was formalized within a document titled *The State of Garbage in Missouri*. This report provides a brief history of solid waste management in Missouri, as well as an overview

of recent waste management practices and accomplishments. It provides insight into what has driven solid waste management progress through the years and serves to document existing conditions. (Appendix D)

Focus on Safe Disposal

Until the 1960s, solid waste was handled with little consideration of public health or environmental quality. As these repercussions were better understood, the state's laws, policies and practices shifted to make solid waste disposal safer and protective. At the federal level, Congress passed the 1965 Solid Waste Disposal Act. The Missouri Solid Waste Management Law was first passed in 1972 and aimed primarily at closing the open town dumps that prevailed in the state.

In 1976, federal law was amended by the Resource Conservation and Recovery Act (RCRA). The U.S. Environmental Protection Agency (EPA) is charged with administering RCRA, which established three main goals: protect human health and the environment; reduce waste and conserve energy and natural resources; and reduce or eliminate the generation of hazardous waste as expeditiously as possible.

To achieve these goals, four interrelated federal programs were established and regulations were adopted. The regulations and programs are commonly referred to by subtitle letter. Subtitle D concerns solid non-hazardous waste and has three primary goals: encourage environmentally sound

solid waste management practices; maximize the reuse of recoverable resources; and foster resource conservation.

Major revisions to federal Subtitle D regulations became effective in Missouri in 1994. These revisions included a number of minimum criteria for landfills that accept municipal solid waste: location restrictions; facility design and operating criteria; groundwater monitoring requirements; corrective action requirements; and financial assurance and closure and post-closure care requirements. Subtitle D also provided flexibility for many location, design and operational requirements in states that developed comprehensive landfill permitting programs.

Missouri was one of the first states to receive Subtitle D approval from the EPA, allowing the department to

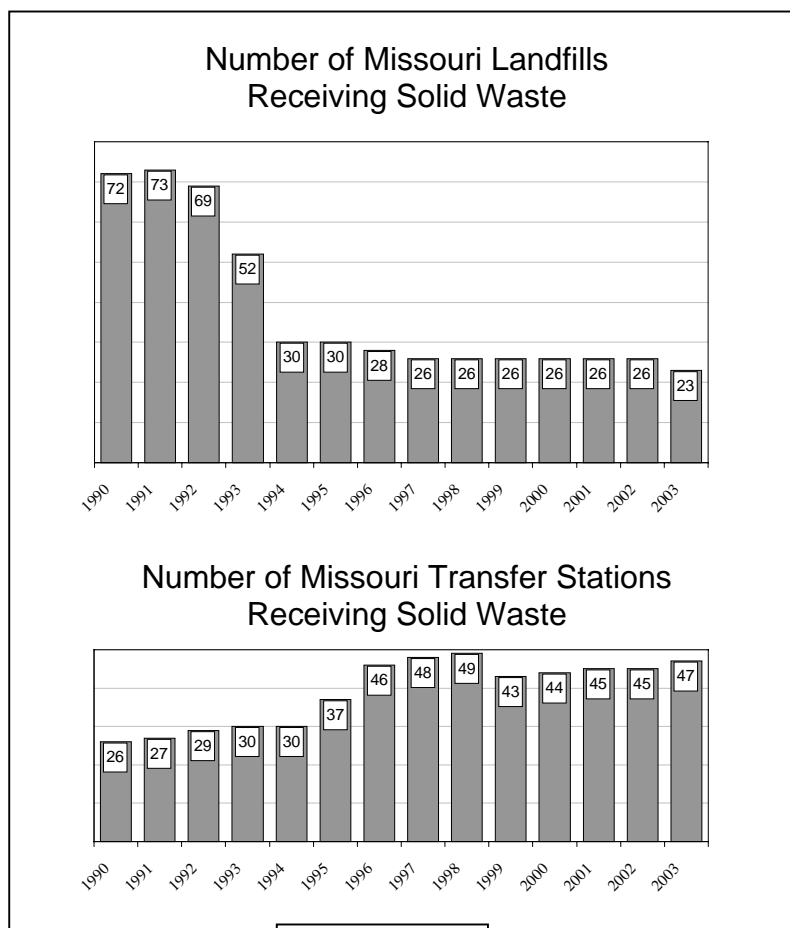


Figure 5

apply this flexibility in reviewing applications for landfill permits. Subtitle D approval also enables the department to issue permits for transfer stations, which can result in savings for both consumers and the solid waste industry.

For example, the federal regulations include a general prohibition on locating landfills in areas that are subject to sinkholes or are prone to earthquakes. This would eliminate the siting of landfills in large portions of the state. With the approved Subtitle D permitting program, the department's Geological Survey Program can work with permit applicants to properly characterize the geology and hydrology of proposed sites on a site specific basis.

While the new requirements meant greater protection from the potential problems associated with land disposal – methane gas migration, groundwater contamination, pollution of waterways – costs for building and operating a landfill rose. The number of transfer stations increased as the number of landfills decreased. (Figure 5)

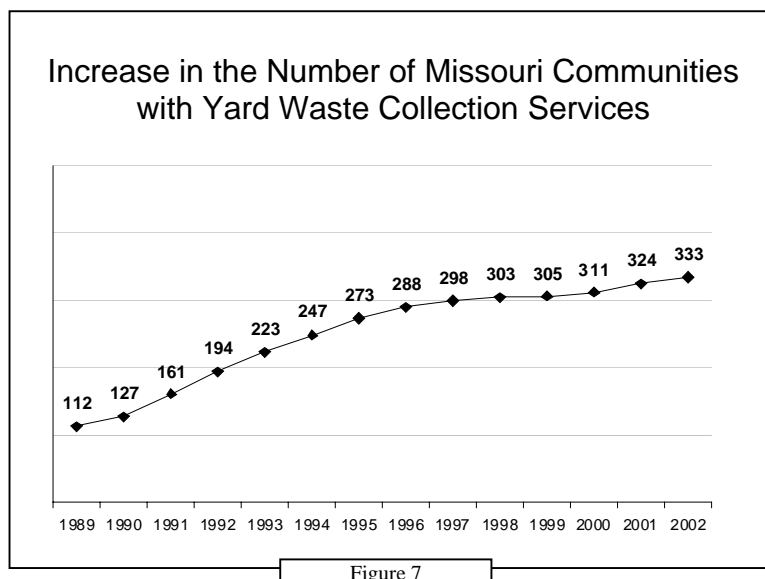
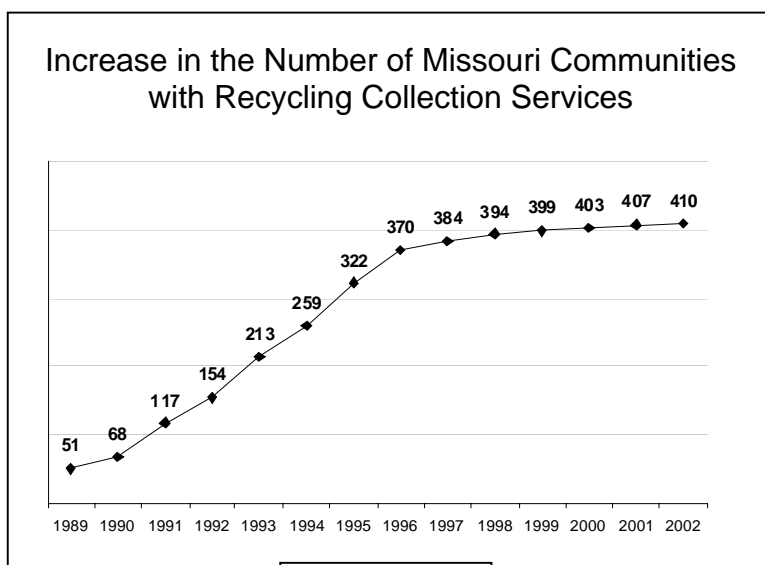
Managing Waste as a Resource

Managing solid waste is continually changing because of public concerns, technological advances, economic trends and new laws or policies. As documented in the *State of Garbage*, legislation in the 1980s and 1990s included provisions for resource recovery. Senate Bill 530, a major amendment to Missouri Solid Waste Law passed in 1990, was the impetus for many of Missouri's advances in reducing disposal and increasing recycling and other landfill alternatives.

The number of communities with access to recycling services has risen from 47 in 1989 to 410 in 2002. (Figure 6) These programs made a substantial contribution to the year 2004 landfill diversion rate of 47 percent.

During that same period, services for yard waste grew from 112 communities in 1989 to 333 in 2002. (Figure 7)

This progress has been achieved by efforts at all levels--individual citizens, local and state government, solid waste districts, large and small businesses,



public institutions and not-for-profits. Legislation and policy have enabled the state to promote and support waste reduction and recycling by the following measures:

- Creating solid waste management districts to help cities and counties work cooperatively in the development of local waste prevention programs, resource recovery services and safe disposal options.
- Requiring that solid waste district plans follow an integrated waste management approach, emphasizing waste reduction and including services for both rural and urban communities.
- Creating and distributing planning guidance along with informational and educational materials that address alternatives to disposal.
- Minimizing regulatory requirements for recycling and composting facilities.
- Providing grant funding to assist in the development of the infrastructure for collection and processing of recyclables and organics.
- Supporting market development for recyclables to help develop a sustainable infrastructure.
- Providing technical assistance to public and private sectors.

2. Public Input for a Strong Plan

a. Public Opinion Surveys

Public opinion surveys conducted in late fall of 1999 and spring of 2004 provided insight into the average citizen's knowledge and understanding of Missouri solid waste management issues. The surveys also defined expectations of Missouri citizens concerning the present and future of solid waste management. (Appendix E)

Missourians who were surveyed rated the management and disposal of solid waste as the second most serious environmental problem in the state, slightly lower than water quality issues. Seventy-one percent said that they recycled in 1999, while seventy-four percent said they recycled in 2004, the top two reasons being to conserve resources and to teach good values.

b. Plan Stakeholder Process

A series of stakeholder meetings involved people from local government, solid waste management districts, regional planning commissions, businesses, organizations, institutions, private citizens and state agencies. The purpose of these work sessions was to bring together individuals with diverse viewpoints and experiences regarding different solid waste streams so that, through a facilitated process, they would provide input for the Missouri Solid Waste Management Plan. Before embarking on work with the stakeholders, department staff developed the following value statements regarding development of a statewide solid waste management plan:

- We have a responsibility to the well being of future generations by minimizing damage to the environment.
- Sustainable and renewable resources are essential for environmental quality.
- Solid waste management affects everyone and is everyone's responsibility.
- People with an understanding of how their solid waste impacts the environment make better decisions.

- The strongest plan is one in which those most affected by the plan are a part of the planning process.
- The plan should be strongly grounded with a broad range of citizen, business and government stakeholders.

Each stakeholder group addressed one of these five categories of solid waste: residential, institutional, commercial, industrial and construction and demolition wastes. The discussions within these groups resulted in the development of strategies for managing Missouri's solid wastes. Each of the stakeholder groups defined a purpose, expressed their vision for solid waste management in Missouri and prepared an action plan for solid waste management within their particular area. (Appendix F)

3. Preparation of the Plan

This plan is the result of organizing and synthesizing the information and stakeholder input described above. A draft document was developed, followed by a series of reviews by departmental staff, solid waste management districts, individuals who participated in the stakeholder groups and the general public. After department staff made revisions in response to the comments received, the plan was sent out for public review and comment.

4. Plan Implementation

This document outlines the actions the stakeholder groups identified for effective management of solid waste in Missouri. Some actions are currently being done while others are not, as explained in section IV. Action Development. A group of approximately thirty stakeholders – representing solid waste industry, solid waste management districts, cities, counties, recycling businesses and non-profit groups – prioritized a list of solid waste activities. Details regarding the process are discussed in section II. Implementation.

B. The Purpose of the Statewide Plan

The Purpose Statement should be the ultimate answer to the question, “Why create a plan for solid waste management?” The answer is not merely that a plan is referenced in state law. The answer must express the highest purpose for planning activities and programs, developing policies and allocating resources for solid waste management across the state in the coming years. In each stakeholder work session, participants were asked to develop a purpose statement for their portion of the plan. This may have been the most difficult task the stakeholders were given, but each group produced a meaningful statement that gave focus to the work that followed. These purpose statements can be found in each group's plan input document in Appendix F.

To develop a single purpose statement for the state plan, department staff synthesized the five stakeholder purpose statements into the following:

The purpose of the Missouri Solid Waste Management Plan is to contribute to the health, well being and quality of life for all Missourians by guiding the development of solid waste management systems which are environmentally and economically sustainable, efficient and effective.

C. Values and Beliefs in Solid Waste Management

The development of the plan must rest on a set of core values and beliefs regarding both how solid waste is managed and the planning process itself. Each stakeholder group was asked to create a list of value and belief statements that reflect the very principles and standards that should guide decision-making and individual behavior in solid waste management.

The product of their effort clearly indicates that the stakeholders take seriously the responsibility of stewardship to protect and enhance the environment in which we live and work, and that they realize that all environmental aspects must be considered when making decisions regarding solid waste management (Appendix F). The five lists created by stakeholders were combined into a single list of value and belief statements reflective of Missourians as a whole:

- Waste management laws and regulations should be consistently and equitably applied and enforced.
- Managing solid waste should be economically feasible for all Missouri citizens, businesses and communities.
- Solid waste management practices must balance environmental and economic considerations.
- The use of the 3Rs (reduce, reuse, recycle, compost, energy recovery) should be emphasized in solid waste management.
- Missouri citizens have a right to a healthy and clean environment.
- Successful solid waste management is best served by ongoing input and active involvement from citizens, businesses and public entities.
- Successful solid waste management must consider the diversity of Missouri's people and environment and be responsive to a range of needs and issues.
- Everyone generates trash and is responsible for its proper management.
- Sustainable and renewable resources are essential for environmental quality and future well being.
- Missourians are responsible for the stewardship of natural resources for the well being of future generations.
- Quality solid waste management decisions are dependent upon an informed, knowledgeable public.
- Education is an essential element to successfully achieving the plan's goals.

D. A Vision of Future Waste Management

In the planning process, the Vision describes where we want the plan to take us; it is our overall sense of direction, the destination. The stakeholders were asked to imagine the state of solid waste management and the environment in Missouri 25 years from now, assuming that the best solid waste management plan had been developed and implemented between now and then. The end product of this activity was a series of vision statements. Ultimately, the Vision process is fruitful when it leads to the development of specific actions that will enable the visions to be realized.

The stakeholders' vision statements were compiled into the following list:

- Missouri is the leading state in waste management.
- Leadership in solid waste management is provided by government, institutions and industry.
- Missouri has clean air, water and land: beautiful countryside, biodiversity, zero emissions, increased green space, no open burning, a healthy and prosperous environment.
- Waste diversion goals are achieved, including significant reduction in solid waste generation.
- Environmental solid waste education is part of the school curriculum at all levels.
- Individuals, businesses and government understand how waste is managed and its potential impacts.
- Integrated solid waste management systems, including solid waste, reuse, recycling, composting and waste-to-energy services, are efficient, convenient and affordable.
- There is 100 percent participation in all elements of integrated solid waste management systems by individuals, businesses, institutions and government.
- Reuse, recycling, composting and waste-to-energy are maximized.
- Energy recovery processes convert solid waste to biomass fuel, use methane generated at landfills and provide alternative fuel for vehicles.
- Closed-loop industrial practices and industrial parks are common, and new businesses or ventures are developed using recycled materials to manufacture products.
- Product stewardship is a standard business practice.
- Products are designed for recyclability and with minimal packaging.
- Recycled products are equal to or better than those with virgin content, are readily available and are purchased by individuals, businesses and government.
- Green building practices are the norm, including preservation of existing structures, sustainable design and material reuse or recycling in both construction and demolition processes.
- Disposal practices utilize state-of-the-art technology to minimize environmental damage and increase resource recovery.
- Decreased governmental regulation is needed as a result of broad general compliance
- Every community has a solid waste plan and is responsible for proper solid waste management.

II. Implementation

A. Introduction

The plan incorporates the input from the five stakeholder groups' long-term vision for solid waste management in Missouri and the actions necessary to achieve that vision. The challenge now is to translate the actions into long-term implementation strategies.

During the process of plan development in calendar year 2003, funding for the department's solid waste activities was sharply cut. A separate group of approximately thirty stakeholders representing solid waste industry, solid waste management districts, cities, counties, recycling businesses and non-profit groups was convened to help determine options for new sources of revenue. As part of this process, this advisory group prioritized a list of solid waste activities created from two sources:

1. The actions proposed by the stakeholder groups for the statewide solid waste management plan. These actions were used to draft the Action Summary and Action Development sections of this plan.
2. A list of actions currently being conducted to carry out the duties and responsibilities specified in the Missouri Solid Waste Management Law.

The advisory group evaluated the list, using a scoring process to indicate the importance of each action. (Appendix N)

B. Core Activities

Core activities are those activities necessary to have for effective and efficient solid waste management in Missouri. Such activities should maintain an emphasis on an integrated approach to solid waste management. Implementation will reflect the resources available and the most critical issues. Continued long-range planning is critical to effectively guide solid waste management decisions that will protect Missouri's environment for future generations. The planning process also insures that these decisions reflect the values and needs of citizens, businesses and local governments.

The core activities in the Missouri solid waste management plan can be summarized as follows:

- Ensuring that the permit process for solid waste disposal and processing facilities is protective of the environment and public health, provides public participation and provides flexibility, where possible, for the regulated community;
- Providing technical guidance and assistance for the development of markets for recovered materials;
- Providing consistent, fair and thoughtful enforcement of solid waste laws and regulations
- Eliminating illegal dumping to the greatest extent possible;
- Providing education at all levels to ensure that citizens of Missouri make sound solid waste management choices;
- Ensuring that older facilities do not cause pollution, create a public nuisance or adversely affect the public health, and that corrective action is taken when they do;

- Permitting, enforcement and market development activities to ensure that waste tires are managed in a way that protects public health and the environment, as well as conserving a valuable resource; and
- Providing financial and technical assistance to increase the reduction, reuse, recycling, composting and energy recovery of solid waste.

C. Roles in Solid Waste Plan Implementation

The Department's Role in Solid Waste Plan Implementation:

Task 1. The department will concentrate on achieving Strategic Planning objectives that address solid waste management in Missouri.

In fulfilling its mission to "preserve, protect, restore and enhance Missouri's natural, cultural and energy resources," the department regularly engages in the strategic planning process. Managing solid waste is has always been an important component of this process. The following three objectives that address waste reduction and diversion, landfill permitting and solid waste enforcement, with strategies for meeting these objectives, were identified in past strategic plans.

Missouri Department of Natural Resources Solid Waste Management Objectives and Strategies

Objective: Maximize the amount of solid waste recovered

Strategies

- Research and promote feasible alternatives to disposal of wastes in landfills.
- Promote unit-based pricing, also known as Pay-As You-Throw, strategies to encourage additional resource recovery.
- Promote integrated solid waste systems.
- Focus on areas of the waste stream that represent the largest portion, by weight, of waste that is disposed in landfills.
- Work with solid waste management districts to focus financial assistance on projects that minimize waste disposal and maximize resource recovery.
- Assist businesses with their ongoing solid waste reduction or recycling programs.
- Promote the purchase of products made with recovered materials.

Objective: Maximize compliance of solid waste disposal areas.

Strategies

- Promote public awareness and community involvement in the locating of landfills.
- Assist landfills with uncorrected methane gas migration problems to identify and remediate problems.
- Assist landfills to ensure proper installation of groundwater monitoring systems to verify that landfills are not polluting groundwater.
- Coordinate with the Division of Geology and Land Survey to ensure that landfills are located, designed and constructed to prevent environmental harm.

Objective: Minimize the amount of improperly disposed solid waste.

Strategies

- Develop and promote economical and convenient solid waste management services accessible to all Missourians.
- Clean up illegal waste sites, and promote local programs that discourage illegal dumping in order to prevent the need for future cleanups of open dump sites.
- Work with counties and cities with existing programs to discourage illegal dumping.

Task 2. The department will work with partners to develop specific goals and implementation timelines for actions.

Each action will require an action plan to be developed, approved and funded. Therefore, periodically reconvening of partners in work groups will be important to assist in prioritizing actions for implementation. Developing realistic implementation timelines and goals will be of utmost importance and will require the participation of a multitude of diverse entities since they will be involved in completing them. As action plans are developed and implemented, monitoring and evaluation are critical to adjust the action plans to meet the overall objectives.

Task 3. The department will provide periodic updates of plan implementation progress.

Information will be communicated in a variety of forms including:

- News releases;
- Publications;
- Web site postings;
- Presentations and
- Public service announcements.

Task 4. The department will assist districts, cities, counties, business and industry in identifying and addressing waste management issues to help them gain the insights, knowledge and experience needed to solve problems and implement change on their own.

This process, also referred to as capacity building, is the careful and supportive development of an organization's core skills and capabilities such as leadership, management, programs and evaluation that build the organization's effectiveness and sustainability. Ultimately, it is an investment in people, institutions and practices that, taken together, will enable Missourians to achieve solid waste management goals that conserve resources and protect the environment.

The department will facilitate capacity building through the provision of technical support activities including:

- Training workshops;
- Development of resource kits;
- Specific technical assistance and
- Resource networking.

Task 5. The department will collect, compile, analyze and make available solid waste information and education materials to inform Missourians about the necessity of proper management of solid waste.

The Role of Partners in Solid Waste Plan Implementation:

In section IV. Action Development, actions are presented along with descriptions of relevant current activities and potential implementation tasks. Additionally, a list of the partners who would be important participants in carrying out these tasks is given for each action. Partners may include solid waste organizations, state or federal agencies, local governments, businesses, institutions and especially solid waste management districts.

It is anticipated that the information provided in this plan will assist local entities when considering solid waste management alternatives. However, it is understood that additional factors may also need to be taken into account when making final decisions about moving forward with a particular action.

- Task 1. Partners should to the greatest extent possible work with the department to develop specific goals and implementation timelines for actions so the successes of each if multiplied.
- Task 2. It is hoped that Partners will, to the greatest extent possible, utilize the plan's Action Development section for developing implementation tasks at the local level.
- Task 3. Partners should to the greatest extent possible work with the department to provide periodic updates of local plan implementation progress to the public.

These actions and potential implementation tasks are recommendations for regional and local consideration to help in the statewide achievement of the plan's vision. These proposals are made to provide guidance to regional and local entities and are not meant to be "imposed" by the plan on those entities.

D. Legislative and Regulatory Change

Many actions found in the plan would require changes in legislation or regulation before they could be implemented. Plan-related legislative or regulatory changes would be dependent upon further development of plan implementation strategies as described above. This does not preclude proposed legislation from being recommended as a need arises. It is recognized that local county, city and district officials play a vital role in the decision-making process and must be in general agreement with any proposed legislative changes.

III. Action Summary

The Visions represent the result of implementing an excellent solid waste management plan. The Actions are the things that need to be done to move from the present toward one or more of the Visions. The Actions presented in the plan are based primarily on input from the state plan stakeholder process and other single-issue stakeholder groups, with some modifications or additions based on department input and comments from the public review process.

Key Strategies for Action

The department reviewed over 250 recommendations for action and several key strategies emerged:

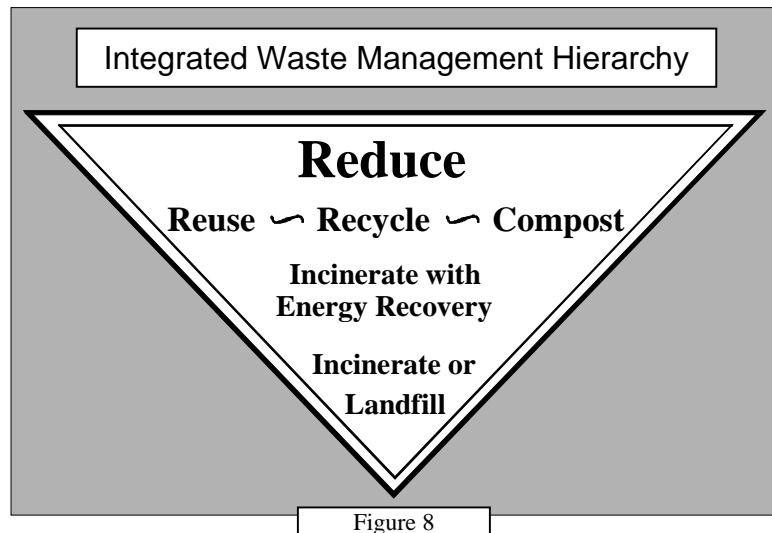
- **Partnerships**

Each one of us generates solid waste in our day-to-day activities – at work or at home – and by special activities – going out to eat or attending a ball game. This means that there are numerous situations where a change in how we manage waste will involve or affect us. This also means that planning for solid waste management does not just involve people in waste management businesses, districts or the Missouri Department of Natural Resources. The department recognized the importance of including diverse viewpoints in the planning process by including private citizens and people from a range of businesses, local governments, non-profit groups, trade organizations and other state agencies in the stakeholder input process.

The actions proposed during the stakeholder meetings included many other ways that partnerships can help to improve solid waste management in Missouri. By working together, the skills and assets of each sector – public and private – are shared in delivering services and making critical decisions. All parties have the opportunity to maximize resources, whether they are financial, human or material. Partnerships can improve communication, help identify potential problems and expand solid waste knowledge and awareness.

- **Education**

Through education, current and future waste generators will learn to respect and conserve natural resources by making informed waste management choices. Education was advocated by every stakeholder group. This included school curriculum development, awareness campaigns and disseminating information about recycling and other waste reduction opportunities. These strategies cut across all management techniques, whether solid waste is minimized, recovered or disposed of in a permitted facility. In fact, the best educational or training programs recognize that each waste management approach is part of an integrated whole or the integrated waste management hierarchy. (Figure 8)



First, Reduce – Efforts to prevent the creation of waste should precede other waste management options that deal with the waste after it is generated, as in recycling. The underlying thought is that solid waste that is not produced does not require management.

Second, Reuse, Recycle, Compost – The next level includes reuse, recycling and composting. These techniques have the potential to divert large amounts of waste from disposal and turn them into valuable products. Through these

techniques, waste materials can potentially go through several cycles of use, conserving raw materials and energy in the process.

Third, Energy Recovery – This level of the hierarchy also uses waste as a resource, but essentially the material can only be used once. The highest use becomes energy production.

Fourth, Disposal – After the first three levels of the hierarchy are maximized, there may be residual solid waste left to manage. This material must be disposed of in an environmentally safe manner, through incineration or landfilling at a permitted facility.

- **Incentives**

Stakeholders included both monetary and non-monetary incentives in their recommendations. One type of incentive would be recognition and awards for businesses, institutions or local governments that implement successful waste reduction and recycling programs. Another type of non-monetary incentive is created when laws and regulations are streamlined to allow public and private entities to use waste as a resource. Additionally, incentives are created when solid waste generators learn of the various options for using waste as a resource that currently exist in law and regulation.

Tax exemptions are one of the ideas for creating financial incentives for recycling put forth by the stakeholders. Currently state law provides a sales tax exemption for recycling equipment purchases. Creating any new tax incentives from the state would require a coalition of industry and government to ensure that costs and opportunities are in balance. Monetary incentives also come in the form of policies or programs that reduce the fee for disposal when waste is reduced or diverted through recycling or composting.

- **Financial Assistance**

To continue making progress in solid waste management, the state will need new or expanded services, a range of educational programs and further development of the infrastructure that provides recycling and other waste reduction opportunities. Each stakeholder group emphasized the importance of providing financial assistance to make this happen. By instituting a tonnage fee on waste disposal in 1990, Senate Bill 530 created the Solid Waste Management Fund.

This fund makes it possible for the department, the solid waste management districts and the Missouri Market Development Program to help both public and private entities. In turn, these entities contribute to the development of an adequate solid waste management infrastructure so that source reduction, reuse, recycling, composting and waste-to-energy technologies may become regular and affordable activities of state and local governments, industries and citizens.

- **Technical Assistance**

While financial assistance is critical to making progress in solid waste management, technical assistance also plays an important role. Many of the approaches to better waste management are not new in concept, but are more complex and broader in scope than ever before. Programs must be designed to be convenient, efficient and cost effective. They must be able to handle new waste streams as new products are introduced into the market place.

Technical assistance provides a mechanism for sharing best practices and the latest technical information on solid waste management. It can include distributing guidance materials, conducting waste audits, performing program reviews or providing technical training. Technical assistance is an activity that can come from both the public and private sectors, providing important opportunities for new partnerships.

- **Mandates**

Throughout the stakeholder process, the idea of instituting mandates to change solid waste management in Missouri was proposed. However, deciding which mandates should be endorsed would require additional work with stakeholders to ensure that a strong base of support is in place. Additionally, mandates must be compatible with Missouri's constitution and laws.

Some of the suggested mandates are already contained in statute: requiring municipalities to develop a solid waste management plan (Sections 260.220 and 260.325 RSMo) and recycled-content purchasing by state offices (Section 34.031.1 RSMo). Some represent a direction that the department has long advocated, but has not been supported through legislation, such as no residential trash burning. Those that represent new requirements for individuals, businesses and local government will require careful consideration of both positive and negative impacts prior to adoption.

In this section, the actions have been placed under overarching objectives and organized into four categories: Education for All, Managing Waste as a Resource, Safe Disposal Practices and Special Solid Waste Issues. At this time, the actions have not been prioritized in any way. Prioritization of actions through stakeholder input will be necessary for implementation. In section IV of the plan, the objectives and actions are presented along with descriptions of related activities conducted by state and local entities, lists of partners and potential implementation tasks.

A. Education for All

K-16 Formal Education

Objective 1: Children in grades K-3 should be able to recognize reduce, reuse and recycle (the 3Rs) as a standard method for managing waste items and exhibit appropriate behaviors such as source separation and litter control.

Actions

- 1a. Develop school-wide 3Rs programs for managing wastes.
- 1b. Teach students about the environment and our dependence on resources.
- 1c. Promote public campaigns such as Missouri Recycles Day.
- 1d. Develop and distribute hands-on materials to help teach about the 3Rs.
- 1e. Correlate solid waste education materials and programs with the Missouri Show-Me Standards for school curriculum.

Objective 2: Students in the middle grades (4-8) should understand how our use of resources can result in disruption of the natural environment and how managing waste properly helps protect the environment.

Actions

- 2a. Integrate solid waste environmental education with other subjects or thematic units.
- 2b. Provide opportunities for students to examine, in depth, local solid waste issues and possible solutions to those issues.
- 2c. Have students develop and implement a waste reduction program at their school.
- 2d. Promote and encourage student behavior that illustrates individual responsibility for managing their wastes.

Objective 3: Upon graduation, high school students should be able to make informed decisions about their role as consumers of products, generators of waste and as stewards of the environment.

Actions

- 3a. Develop lessons from which students can identify strategies to reduce their use of resources, thereby reducing the amount of waste they generate.
- 3b. Educate students about individual responsibility for the wastes they generate, including pre-cycling or purchasing items that have less packaging or that use post-consumer recycled material in the packaging or in the product itself.
- 3c. Educate students about the importance of adopting a lifestyle based on the efficient and sustainable use of resources, in order to achieve a sustainable society.

Objective 4: College and university students should have the opportunity to learn about solid waste management through a variety of course offerings or through direct experience.

Actions

- 4a. Modify the core requirement for natural and social sciences to include a course that meets established guidelines for environmental literacy.
- 4b. Promote green campus policies that help get staff and students alike into the habit of recycling while setting a positive example for transfer to society in general.
- 4c. Teacher education programs should incorporate a course in environmental education methods for undergraduates and promote interdisciplinary degree programs.

Non-Formal Education

Objective 1: Workshops on solid waste management issues need to be made available to in-service teachers to provide them with expertise and experiences they can directly use in their classrooms.

Actions

- 1a. Government agencies such as the Missouri Department of Natural Resources offer solid waste workshops to in-service teachers or assist others in doing so.
- 1b. Educational providers should design their services to meet the needs of teachers who wish to help their students learn about local environmental issues such as solid waste management.
- 1c. State and local solid waste agencies should work together to determine how to reach schools to provide experiences that otherwise would not be available to teachers and their students.

Objective 2: Citizens should be able to participate in available hearings, meetings and workshops that provide solid waste information and address solid waste issues.

Actions

- 2a. Train community leaders to educate others about integrated waste management practices.
- 2b. Promote the purchasing of recycled products and the concept of a total recycling system.
- 2c. Promote solid waste management awareness through community education programs.

Objective 3: Provide information that enables consumers to participate fully and effectively in management practices that reduce wastes.

Actions

- 3a. Maintain updated lists of recycling facilities, transfer stations, disposal facilities and collection options for citizens to find out what they need to do and how much it will cost.
- 3b. Use the media and public ad campaigns to promote the 3Rs, waste-to-energy and the concept of integrated waste management.
- 3c. Provide opportunities for consumers to get involved in determining costs, implementing new practices or to providing input for special topics such as reduced packaging.

Management Training

Objective 1: Technicians and Administrators – Provide training which addresses the specific skills and decision-making abilities that elected officials and business and manufacturing leaders must have to make solid waste management possible.

Actions

- 1a. Administer and share results of constituent surveys to foster communication between consumers and management personnel.
- 1b. Inform constituents to involve them in the decision-making process.
- 1c. Require training for solid waste managers in landfill management, collection options and other aspects of managing solid waste.

Objective 2: Business and Manufacturers - Businesses and manufacturers, representing the front end production of the life cycle of various products, should fully understand what they can to reduce waste, use less packaging and make durable products.

Actions

- 2a. Provide training to manufacturers about life-cycle analysis and how managing waste as a resource can be an asset rather than a cost.
- 2b. State agencies should provide opportunities to update business leaders on waste issues and best available practices for reaching reduction goals.

B. Managing Waste as a Resource

For All Generators: Residential, Institutional Commercial, Industrial, Construction and Demolition

Objective 1: Provide incentives that encourage the safe and environmentally sound management of all types of solid waste, minimizing disposal and maximizing resource conservation.

Actions

- 1a. Recognition programs for waste reduction, recycling, composting and other alternatives to disposal.
- 1b. Provide tax incentives for recycling collection, recycling research and development, development of new recycled products, co-collection systems and waste-to-energy projects.
- 1c. Encourage the use of deposits for beverage containers to increase recycling of aluminum cans, plastic bottles and glass bottles.

Objective 2: Provide financial assistance for programs and activities designed to reduce, reuse, recycle, compost or recover energy from solid waste.

Actions

- 2a. Direct grants and other financial assistance toward projects which meet the greatest needs of Missouri's waste reduction infrastructure. This would include reuse, recycling, composting and waste-to-energy projects. Funds should be provided for recycling start-ups or venture businesses and technical research and development.
- 2b. Use federal funds for technical research of alternatives to disposal.
- 2c. Garner venture capital from the private sector to help create a commercially viable recycling industry.

Objective 3: Provide technical assistance to citizens, local governments, non-profit organizations, institutions and businesses in order to assist them in reducing solid waste at the source and using alternatives to disposal.

Actions

- 3a. Create solid waste management cross-department databases, including available solid waste services, financial assistance and other resources.
- 3b. Provide model contracts for solid waste services that provide dollar incentives for waste reduction and recycling.
- 3c. Promote model programs and best practices.
- 3d. Promote the use of waste audits to help design and evaluate programs.

For Residential Solid Waste

Objective 1: Increase source reduction and reuse of residential waste.

Actions

- 1a. Create or expand community source reduction programs.
- 1b. Create new reuse programs and promote existing opportunities.

Objective 2: Increase the number of communities using unit or volume based solid waste collection systems such as Pay-as-You-Throw to create financial incentives for waste reduction and resource recovery.

Actions

- 2a. Provide technical assistance to help create or expand Pay-as-You-Throw solid waste collection systems.
- 2b. Provide financial assistance to help create or expand Pay-as-You-Throw solid waste collection systems.

Objective 3: Maximize recycling collection opportunities and ensure that residential recycling programs are sustainable.

Actions

- 3a. Provide technical assistance to create, expand and improve residential recycling programs.
- 3b. Provide financial assistance for communities and private haulers to help create, expand and improve recycling collection services for residential waste. Place greater emphasis on projects designed to improve efficiency and ensure sustainability.

For Institutional Solid Waste

Objective 1: State and local governments provide leadership through their policies and practices for managing the solid waste they generate.

Actions

- 1a. Adopt comprehensive waste reduction policies.
- 1b. Evaluate current waste reduction programs.
- 1c. Create or expand source reduction, reuse, recycling, composting and waste-to-energy programs for government facilities.
- 1d. Increase awareness of accomplishments in waste reduction.

Objective 2: Institutions of all types maximize their waste reduction, reuse and recycling.

Actions

- 2a. Evaluate programs in place for major types of institutions: health care, correctional, research facilities or other similar facilities.
- 2b. Provide technical assistance to create, expand or improve waste reduction programs that complement or enhance the institution's primary mission.
- 2c. Increase the reuse of institutional waste.

For Commercial and Industrial Solid Waste

Objective 1: Business and government adopt product stewardship policies and goals.

Actions

- 1a. Promote product stewardship concepts and principles.
- 1b. Facilitate process of stakeholder input for policy and goal development.

Objective 2: Promote the establishment or expansion of waste-based businesses to increase waste diversion and enhance economic development.

Actions

- 2a. Research the impact of waste-based businesses on Missouri's economy.
- 2b. Promote industrial development that creates by-product synergy.
- 2c. Increase the use of existing reuse and recycling services by commercial and industrial generators.

For Construction and Demolition Solid Waste

Objective 1: Prevent solid waste through reuse of buildings.

Actions

- 1a. Promote building reuse and historic preservation.
- 1b. Provide technical and financial assistance for building reuse and historic preservation.

Objective 2: Reduce waste and increase recovery in construction and demolition processes.

Actions

- 2a. Promote waste reduction as part of the green building concept.
- 2b. Expand processing of construction and demolition waste to increase resource recovery while protecting the environment.
- 2c. Promote and increase reuse opportunities for construction and demolition waste.

Recycling Market Development

Objective 1: Create new markets and strengthen existing markets for recovered materials in Missouri.

Actions

- 1a. Promote the purchasing of recycled-content products by individuals, businesses, institutions and government offices.
- 1b. Create financial and other incentives for market development and publicity.
- 1c. Conduct periodic review of recyclable materials marketability.
- 1d. Develop local end-use markets.
- 1e. Help manufacturers of recycled products adopt technologies or processes to help increase efficiency, productivity and profitability.
- 1f. Create more recycled products.
- 1g. Financial assistance to support end markets, for new market research and development, for advertising recycled products and for business subsidies to encourage use of recycling markets.

Organics in Solid Waste

Objective 1: Reduce a significant amount of the organic waste that is currently being disposed in landfills.

Actions

- 1a. Encourage programs and activities that reduce the amount of organic materials destined for landfills, including backyard composting.
- 1b. Encourage programs and activities that divert organic materials from disposal in landfills through reuse.

Objective 2: Recover a significant amount of the organic waste that is currently being disposed in landfills.

Actions

- 2a. Encourage the effective recycling of organic materials from the waste stream.
- 2b. Continue encouraging the use of composting to produce rich organic soil amendments from organic materials such as food residuals, wood waste and yard wastes.
- 2c. Develop and update information regarding composting for individuals, businesses and decision-makers.
- 2d. Develop educational seminars and workshops regarding composting for individuals and businesses.
- 2e. Encourage the use of organic materials from municipal solid waste to produce energy when the organic materials cannot be reused, recycled or composted.
- 2f. Encourage economically sustainable capture and use of methane gas in Missouri landfills.

C. Safe Disposal Practices

Permitted Facilities

Objective 1: Promote alternative waste disposal and management.

Actions

- 1a. Encourage energy use plans in landfill permits.
- 1b. Promote waste collection services in areas not presently served by collection services such as green boxes.
- 1c. Promote siting of more construction and demolition landfills.
- 1d. Streamline regulations and permitting process to more easily use by-products and resources.

New Technologies

Objective 1: Pave the way to new, cleaner, safer and more cost-efficient methods of managing solid waste in Missouri.

Actions

- 1a. Research and develop lower cost alternatives for landfill mining.
- 1b. Research and develop innovative ways to properly close and maintain old landfills that do not have financial assurance instruments.
- 1c. Design future landfills as planned resource recovery facilities.

Illegal Dumping Enforcement and Prevention

Objective 1: Work toward having a cleaner environment and use of safe disposal methods.

Actions

- 1a. Allocate funding sources toward illegal dumping.
- 1b. Enforce littering laws and educate constituents and voters regarding anti-littering campaigns.
- 1c. Enhance enforcement activities to prevent illegal dumping, enforce existing laws and increase inspections.
- 1d. Regulators focus on long-term solutions and either ease or strengthen regulations. Look at the possibility of legislative action.

Technical Assistance

Objective 1: Provide technical assistance and guidance to businesses, governments and individuals regarding solid waste permitting and enforcement issues.

Actions

- 1a. Establish and maintain open lines of communication with the regulated community and the general public with respect to technical matters.
- 1b. Develop and maintain appropriate workshops regarding technical issues.

D. Special Solid Waste Issues

Household Hazardous Waste (See Household Hazardous Waste Plan in Appendix I)

1. Electronics

Objective 1: Maximize to the greatest extent possible, the collection, reuse and recycling of used electronics.

Actions

- 1.a. Inform consumers of the hazardous nature of the materials in consumer electronics and encourage them to use recycling and reuse programs.
- 1.b. Encourage the establishment of new and continue operation of existing electronics collection, recycling and refurbishing businesses.
- 1.c. Assist in the development of programs that encourage retailers to accept old electronics for recycling.
- 1.d. Continue to participate in organizations that encourage product stewardship.

2. Mercury

Objective 1: Educate the public on potential mercury dangers, sources of mercury, fish advisories, take-back programs and safer alternatives.

Actions

- 1.a. Develop and incorporate mercury instruction and educational materials for classroom use and distribution to the public.
- 1.b. Provide ongoing information to the public regarding the hazards of mercury as well as efforts in reducing mercury contamination.

Objective 2: Reduce potential mercury exposures and releases to the environment.

Actions

- 2.a. Encourage use of non-mercury containing devices and increase recycling opportunities for mercury-containing products.
- 2.b. Promote industry-sponsored take-back programs for mercury-containing products.

Materials Banned from Missouri Landfills

1. Major Appliances

Objective 1: Reduce illegal dumping and increase recycling of major appliances, also known as white goods.

Actions

- 1a. Provide additional information and education materials regarding major appliance recycling to public and private sectors.
- 1b. Encourage solid waste management districts to conduct major appliance collections.
- 1c. Provide funding for refrigerant extraction certification and equipment.
- 1d. Create a fee system to subsidize major appliance recycling and illegal disposal cleanup.
- 1e. Encourage better end markets for scrap metal.
- 1f. Assist small businesses that want to collect major appliances by streamlining the regulatory process.
- 1g. Encourage reuse, repair and recycling of major appliances.

2. Lead-Acid Batteries

Objective 1: Continue collection and recycling of lead-acid batteries.

Action

- 1a. Work with retailers and solid waste management districts to continue collection of lead-acid batteries.

3. Used Oil

Objective 1: Encourage continued proper management and recycling of used oil and increase voluntary participation of businesses and local governments in do-it-yourself used oil collection programs.

Actions

- 1a. Educate public, private and business sectors about proper management techniques and recycling opportunities for used oil through written and media avenues.
- 1b. Encourage more Solid Waste Management District household hazardous waste collection programs to include used oil in their collections.
- 1c. Target grants to develop used oil recycling and collection enterprises.

Objective 2: Provide technical assistance and information regarding used oil collection locations in the state.

Action

- 2a. Compile and maintain a database of all used oil collection services in the state.

4. Whole Tires

Objective 1: Provide incentives that encourage the safe and environmentally sound management of waste tires, minimizing disposal and maximizing recycling of waste tires into Tire-Derived-Fuel and beneficial end-use products such as playground cover material. This objective addresses the five percent of waste tires currently not accounted for in the current infrastructure of the waste tire industry.

Actions

- 1a. Require permits for waste tire sites, processors and haulers.
- 1b. Enhance established controls for permitting, enforcement and inspections.
- 1c. Ensure that tire collection centers such as tire retailers, service stations and salvage yards are properly managed to prevent vermin and fire hazards by recycling or disposing tires.
- 1d. Address the five percent of waste tires that are not accounted for through the existing infrastructure by enhancing the tracking system.
- 1e. Increase collection center inspections.

Objective 2: Provide technical assistance to citizens, local governments, non-profit organizations, institutions, business and the waste tire industry in order to assist them in reducing waste tires at the source, using alternatives to disposal and using sound practices for properly managing waste tires. The technical assistance will provide them with options for the cleanup, proper disposal and recycling of waste tires to prevent illegal waste tire dumps, infectious diseases and tire fires.

Actions

- 2a. Conduct inspections and enforcement actions against violators of the waste tire law.
- 2b. Assist local governments with waste tire control efforts and illegal dump cleanups.
- 2c. Provide technical assistance to the public, legislators and other officials, tire retailers and recyclers.
- 2d. Disseminate the department's *Management of Waste Tire - Technical Bulletin* on how to prevent tires from becoming mosquito breeding grounds.
- 2e. Provide information on tire fire prevention through the department's *Response to Tire Fires –Technical Bulletin*.
- 2f. Provide monetary assistance for the cleanup of innocent party tire dumps statewide to prevent mosquito-borne illnesses and the proliferation of vermin.
- 2g. Offer incentives to property owners who self-report their tire dumps to sign innovative settlement agreements.
- 2h. Reimburse non-profit groups for their waste tire cleanups to encourage citizen participation in the maintenance of our environment and to educate the public.

Objective 3: Develop the waste tire market to the point where waste tires have value. In doing so, the waste tires currently in dumps will be removed from the dumps, by the landowners themselves, and taken to the waste tire recyclers to be used as a raw material in the manufacture of tire-derived fuel and new products.

Actions

- 3a. Provide grants for schools, parks and other non-profit entities to purchase playground cover made from tires to protect children from injuries from falls.
- 3b. Promote the use of rubberized asphalt and the use of crumb rubber in the manufacture of new products.
- 3c. Encourage power plants and cement kilns to use tire-derived fuel, lowering their emissions and using more tires.
- 3d. Augment market development via Waste Tire Grant Program.
- 3e. Coordinate with other state agencies and industry to introduce more waste tire-derived materials in their projects and the use of waste tires in civil engineering applications.

IV. Action Development

In this section, Actions have been further developed to include discussions under the following headings.

Current Programs and Activities: This section describes programs or activities that have been conducted or are currently in place to address the proposed action. If there are no current programs or activities, there may still be some discussion on the topic.

Partners: This section lists the partners who are either already involved in the Current Programs and Activities, or who would be important participants in the development and implementation of new programs and activities.

Potential Implementation Tasks: To flesh out the Actions recommended by stakeholders, department staff developed a list of potential tasks that could be part of plan implementation. This may include model programs in Missouri, another state or at the national level to emulate, current programs or activities that should be continued or new programs or activities which would need to be initiated. These come from a number of sources: successful programs funded by State Grants or District Grants; U.S. Environmental Protection Agency guidance materials; guidance and information from other states, solid waste and recycling organizations; and suggestions from stakeholders.

The tasks suggested are not comprehensive. Although these may be interpreted as activities primarily for the department, the goal is for these to be shared activities, carried out by public and private entities, and at the local, regional or state level, as appropriate. The specific tasks and the entities responsible for implementation cannot be determined by department staff alone. Further collaboration with a range of stakeholders will be necessary to prioritize tasks, determine responsible parties and create timelines for implementation.

A. Education for All

Effective solid waste management is dependent upon everyone having a level of understanding about solid waste issues and solutions that enables them to participate in the best management practices. Such an understanding can be gained through tailored education or training programs for formal education (K-16), non-formal programs such as workshops, special interest meetings and consumer information and relevant training and skills for those in waste management positions. Specific objectives and actions for these three categories are described in this section. Many of the actions may be appropriate for more than one objective.

K-16 Formal Education

Solid waste education needs to be addressed at all levels of formal education to establish adequate understanding and appropriate behaviors regarding individual responsibility for solid waste management.

Objective 1: Children in grades K-3 should be able to recognize reduce, reuse and recycle (3Rs) as a standard method for managing waste items and exhibit appropriate behaviors such as source separation and litter control.

Actions

1a. Develop school-wide 3Rs program for managing wastes.

Current Programs and Activities: *Wildwood Babes* coloring books are a department- produced coloring and activity book geared for K-3 that addresses waste reduction, reuse and recycling;

Partners: Missouri Department of Natural Resources.

Potential Implementation Tasks:

- Continue to endorse or encourage current programs.
- Continue to research and develop new projects.

1b. Teach students about the environment and our dependence on resources.

Current Programs and Activities: *ReSource Your Waste* is a teachers guide developed for grades 4-8, but several activities may be easily adapted to address K-3 grade levels.

Partners: Missouri Department of Natural Resources and the Missouri Department of Elementary and Secondary Education.

Potential Implementation Tasks:

- Review of National Geographic Standards for K-3 standards.
- Review North American Association for Environmental Education guidelines for educational materials.

1c. Promote public campaigns such as Missouri Recycles Day.

Current Programs and Activities: The U.S. Environmental Protection Agency (EPA) has developed a guide book for setting up recycling programs in schools. The Missouri Recycling Association sponsors a recycling poster contest for grades K-12 that coincides with Missouri Recycles Day. The Missouri Waste Control Coalition sponsors an environmental greeting card competition each year for grades 5-9.

Partners: Missouri Recycling Association and the Missouri Department of Natural Resources.

Potential Implementation Tasks:

- Endorse programs that encourage recycling and waste management activities that involve children at an early age.
- Continue efforts to develop new programs to promote 3Rs.

1d. Develop and distribute hands-on materials to help teach about the 3Rs.

Current Programs and Activities: The Missouri Department of Natural Resources has developed and distributed nearly 50 Travelin' Trash Kits statewide. These kits provide hands-on materials for teachers to use in the classroom to teach about the 3Rs. The St. Louis Teachers Recycle Center is an exchange program that reuses surplus and waste materials. These materials include art and crafts materials along with regular school supplies. Materials are available to teachers at little or no cost.

Partners: Missouri Department of Natural Resources and the Solid Waste Management Districts.

Potential Implementation Tasks:

- Promote use of kits through conference presentations and other media, workshops and consulting.
- Encourage development of waste exchange programs in other areas of the state.

1e. Correlate solid waste education materials and programs with the Missouri Show-Me Standards for school curriculum.

Current Programs and Activities: While many educational materials covering the subject of solid waste management exist, many may not be used by Missouri teachers because corresponding Show-Me Standards for the activities have not been provided. Missouri's Show-Me Standards have been developed to identify minimum core competencies for students in Missouri's schools. Solid waste management issues cross several subject areas including science, math and social studies. The department's *ReSource Your Waste* has identified Show-Me Standards for each of the activities.

Partners: Missouri Department of Elementary and Secondary Education and the Missouri Department of Natural Resources.

Potential Implementation Tasks:

- Continue to make Missouri teachers aware of solid waste curricula that have correlated Show-Me Standards.
- Continue to develop materials that include the Show-Me Standards.

Objective 2: Students in the middle grades (4-8) should understand how our use of resources can result in disruption of the natural environment and how managing waste properly helps protect the environment.

Actions

2a. Integrate solid waste environmental education with other subjects or thematic units.

Current Programs and Activities: Courses offered through the department's Outreach and Assistance Office-Environmental Education Unit.

Partners: Missouri Department of Natural Resources, Missouri Department of Elementary and Secondary Education, Missouri Environmental Education Association and teachers.

Potential Implementation Tasks:

- Develop examples of solid waste issues that cross different subject areas, especially math, science and social studies.

2b. Provide opportunities for students to examine, in depth, local solid waste issues and possible solutions to those issues.

Current Programs and Activities: Investigating and Evaluating Environmental Issues and Actions training for investigation approach, Project Learning Tree, Project WET and Project Wild.

Partners: Missouri Department of Natural Resources, Solid Waste Management Districts, local governments and schools.

Potential Implementation Tasks:

- Encourage teachers to receive training in the three Project programs.

2c. Have students develop and implement a waste reduction program at their school.

Current Programs and Activities: LEAP Program.

Partners: Missouri Department of Natural Resources and Gateway Center for Resource Efficiency.

Potential Implementation Tasks:

- Encourage schools to investigate EPA guidelines for developing school recycling programs.

2d. Promote and encourage student behavior that illustrates individual responsibility for managing their wastes.

Current Programs and Activities: There are several recognition events available to students, such as the annual competition for the department's Earth Day slogan, the Missouri Recycling Association calendar picture contest and the Missouri Waste Control Coalition annual environmental greeting card program.

The Investigating and Evaluating Environmental Issues and Actions (IEEIA) teaching technique is an excellent tool for educators to use. IEEIA promotes citizenship and responsibility in students as they learn about an environmental issue. A series of case studies showing how IEEIA can be applied to solid waste education can be found in the publication *A Science-Technology-Society Case Study: Municipal Solid Waste*, authored by John Ramsey, Harold Hungerford and Trudi Volk.

Partners: Missouri Department of Elementary and Secondary Education and the Missouri Department of Natural Resources.

Potential Implementation Tasks:

- Encourage student-led school recycling programs as suggested in *ReSource Your Waste*.
- Encourage educators to review and use *A Science-Technology-Society Case Study: Municipal Solid Waste* in curriculum development.

Objective 3: Upon graduation, high school students should be able to make informed decisions about their role as consumers of products, generators of waste and as stewards of the environment.

Actions

3a. Develop lessons from which students can identify strategies to reduce their use of resources, thereby reducing the amount of waste they generate.

Current Programs and Activities: Environmental Education Forum Decision Option. In this model, different waste management approaches are evaluated to determine the best method for reducing waste.

Partners: Missouri Department of Natural Resources.

Potential Implementation Tasks:

- Continue to train teachers with programs such as *Project Learning Tree* Secondary Module: Solid Waste Management.

- 3b. Educate students about individual responsibility for the wastes they generate, including pre-cycling or purchasing items that have less packaging or that use post-consumer recycled material in the packaging or in the product itself.**

Current Programs: Currently there are a limited number of programs with a Total Recycling System. A Total Recycling System is one that involves all of the 3Rs and also includes the purchase of products made of recycled materials.

Partners: Missouri Department of Natural Resources and high school teachers.

Potential Implementation Tasks:

- Develop High School Module to address the Total Recycling System. This module will provide information that explains the entire recycling loop and encourages waste reduction, reuse, recycling and environmentally sound purchasing.

- 3c. Educate students about the importance of adopting a lifestyle based on the efficient and sustainable use of resources, in order to achieve a sustainable society.**

Current Programs and Activities: National Geographic Standards address the use of resources relative to sustainability.

Partners: Missouri Department of Natural Resources, Missouri Environmental Education Association and teachers.

Potential Implementation Tasks:

- Continue to encourage the use of solid waste case studies and models such as the Investigating and Evaluating Environmental Issues and Actions Solid Waste Case Study; Organics Module and food waste issues.

Objective 4: College and University students should have the opportunity to learn about solid waste management through a variety of course offerings or through direct experience.

Actions

- 4a. Modify the core requirement for natural and social sciences to include a course that meets established guidelines for environmental literacy.**

Current Programs and Activities: Missouri Waste Control Coalition Scholarship Program. The coalition established this scholarship for students who have an interest in or are focusing on classes in the environmental studies field. While not modifying core requirements to establish guidelines for environmental literacy, the scholarship provides an incentive for students to consider environmental issues while pursuing a college degree.

Partners: Missouri Department of Elementary and Secondary Education, Coordinating Board for Higher Education and University administrators.

Potential Implementation Tasks:

- Use established standards for environmental education, such as the North American Association for Environmental Education Guidelines for Excellence, to develop core requirements in environmental science and studies.
- Lieberman: *Using the Environment as an Integrating Context for Learning*.

4b. Promote Green Campus policies that help get staff and students alike into the habit of recycling while setting a positive example for transfer to society in general.

Current Programs and Activities: Staff and students team up to develop recycling policies and implement recycling programs on campus and at on-campus events.

Partners: Colleges and Universities statewide and the College and University Recycling Council of the National Recycling Coalition.

Potential Implementation Tasks:

- Implement strategies for on-campus waste management that are described in A. A. Smith's, *Campus Ecology* and J. Keniry's *Ecodemia*.

4c. Teacher education programs should incorporate a course in environmental education methods for undergraduates and promote interdisciplinary degree programs.

Current Programs and Activities: Environmental Education materials such as Project WILD, Project WET and Project Learning Tree are often incorporated in science methods courses for pre-service teachers.

Partners: Coordinating Board for Higher Education, statewide project coordinators, College and University Teacher Education Programs.

Potential Implementation Tasks:

- Promote to the greatest extent possible the University of Wisconsin Steven's Point on-line course, *Fundamentals of Environmental Education*, which has been developed to address this need.

Non-Formal Education

Solid waste management is a major social issue that needs to be understood by concerned citizens everywhere. Expertise needs to be available through a wide variety of sources including presentations, courses and workshops for in-service teachers, interest groups, stakeholders and others in a position to share and promote awareness and understanding of solid waste issues.

Objective 1: Workshops on solid waste management issues need to be made available to in-service teachers to provide them with expertise and experiences they can directly use in their classrooms.

Actions

- 1a. Government agencies such as the Missouri Department of Natural Resources offer solid waste workshops to in-service teachers or assist others in doing so.**

Current Programs and Activities: Conference presentations (e.g., Missouri Waste Control Coalition, Interface) and Environmental Education credit workshops for teachers.

Partners: Missouri Department of Elementary and Secondary Education and the Missouri Department of Natural Resources.

Potential Implementation Tasks:

- Resource Management Institutes are being developed through the department's Environmental Assistance Office and will promote teacher education programs.

- 1b. Educational providers should design their services to meet the needs of teachers who wish to help their students learn about local environmental issues such as solid waste management.**

Current Programs and Activities: Several larger cities, including Springfield and St. Charles, have solid waste programs and environmental education staff who can serve as models for this action. Solid waste management districts have also provided curriculum and teaching materials and conducted presentations to schools in their areas.

Partners: Missouri Department of Natural Resources, local governments and Solid Waste Management Districts.

Potential Implementation Tasks:

- Research and develop continuing professional development opportunities for educators. The Missouri Environmental Education Association certification calls for an accumulation of hours of direct instruction, field experiences and classroom applications.

- 1c. State and local solid waste agencies should work together to determine how to reach schools to provide experiences that otherwise would not be available to teachers and their students.**

Current Programs and Activities: Information and presentations are often provided to local schools by solid waste management district representatives.

Partners: Solid Waste Management Districts, local governments and the Missouri Department of Natural Resources.

Potential Implementation Tasks:

- Identify needs and coordinate efforts to improve delivery of programs through all solid waste management districts.

Objective 2: Citizens should be able to participate in available hearings, meetings and workshops that provide solid waste information and address solid waste issues.

Actions

- 2a. Train community leaders to educate others about integrated waste management practices.**

Current Programs and Activities: Environmental Management Institutes.

Partners: Missouri Department of Natural Resources, local governments and Solid Waste Management Districts.

Potential Implementation Tasks:

- Continue to promote Resource Management Institutes for community leaders.
- Encourage the Missouri Recycling Association and the Missouri Waste Control Coalition to develop workshops for community leaders at their annual conferences.

- 2b. Promote the purchasing of recycled products and the concept of a total recycling system.**

Current Programs and Activities: The Missouri Market Development Program, administered by the Environmental Improvement and Energy Resources Authority, produces a recycled products guide annually.

Partners: Missouri Department of Natural Resources, Missouri Market Development Program, Missouri Recycling Association, Solid Waste Management Districts, recycled-content product manufacturers and retail sales businesses.

Potential Implementation Tasks:

- Work with partners to promote recycled-content purchasing through the media and at appropriate community events.

2c. Promote solid waste management awareness through community education programs.

Current Programs and Activities: Cleanup programs and local issues, public hearings, information sources, Mid-America Regional Council and Bridging the Gap.

Partners: Missouri Department of Natural Resources, Missouri Department of Conservation, Missouri Department of Transportation, Solid Waste Management Districts, community programs and Gateway Center for Resource Efficiency.

Potential Implementation Tasks:

- Work with partners to develop and distribute education modules suitable for community education programs.
- Promote local opportunities for community involvement in solid waste issues through programs established by partners.

Objective 3: Provide information that enables consumers to participate fully and effectively in management practices that reduce wastes.

Actions

3a. Increase local awareness of opportunities and responsibilities for waste reduction and recycling.

Current Programs and Activities: The Solid Waste Management Program Web site provides a map showing the locations of landfills and transfer stations, and recycling facility information is provided by assessment inventory information submitted biannually by the solid waste management districts.

Partners: Missouri Department of Natural Resources, Solid Waste Management Districts, local governments, solid waste industry and solid waste organizations.

Potential Implementation Tasks:

- Strategic planning or stakeholder meetings.
- Public meetings and hearings for input on improvement of programs.

3b. Use the media and public ad campaigns to promote the 3Rs, waste-to-energy and the concept of integrated waste management.

Current Programs and Activities: Press releases; contributing articles for Reduce, Reuse, Recycle column in monthly Conservation Federation of Missouri's *Missouri Wildlife* newsletter.

Partners: Missouri Department of Natural Resources, Conservation Federation of Missouri, newspapers, radio, television and other media for mass communication.

Potential Implementation Tasks:

- Continue to contribute articles for ongoing column.
- Advertise technical bulletins available through the Missouri Department of Natural Resources.

3c. Provide opportunities for consumers to get involved in determining costs, implementing new practices, or to provide input on special topics such as reduced packaging.

Current Programs and Activities: Public Opinion Surveys and needs assessment; waste composition study.

Partners: Missouri Department of Natural Resources, Missouri Market Development Program, local governments and solid waste industry.

Potential Implementation Tasks:

- Provide incentives and a level of understanding people will need to change their behaviors.

Management Training

Local to statewide managers, technicians, business executives and those in a position to develop and operate solid waste management facilities must have a thorough understanding of solid waste issues and be able to provide the leadership and decision-making skills needed to effectively implement the best possible collection and disposal options. In addition to the following actions, many related actions may be found in Managing Waste as a Resource.

Objective 1: Technicians and Administrators – Provide training which addresses the specific skills and decision-making abilities that elected officials and business and manufacturing leaders must have to make solid waste management possible.

Actions

1a. Administer and share results of constituent surveys to foster communication between consumers and management personnel.

Current Programs and Activities: Open meetings, conferences and outreach activity.

Partners: Missouri Department of Natural Resources and Solid Waste Management Districts.

Potential Implementation Tasks:

- Continue to provide stakeholders with up-to-date information.

1b. Inform constituents to involve them in the decision-making process.

Current Programs and Activities: Post issue review on Web site.

Partners: Missouri Department of Natural Resources and local governments.

Potential Implementation Tasks:

- Strive to make information available to public in a timely manner.

1c. Require training for solid waste managers in landfill management, collection options and other aspects of managing solid waste.

Current Programs and Activities: Updates and training sessions for landfill operators. Solid Waste Technician Certification.

Partners: Missouri Department of Natural Resources, Missouri Waste Control Coalition, Solid Waste Association of North America and solid waste industry.

Potential Implementation Tasks:

- Review changes in law or regulations training updates.

Objective 2: Business and Manufacturers - Businesses and manufacturers, representing the front-end production of the life cycle of various products, should fully understand what they can do to reduce waste, use less packaging and make durable products.

Actions

- 2a. Provide training to manufacturers about life-cycle analysis and how managing waste as a resource can be an asset rather than a cost.**

Current Programs and Activities: Encourage Environmental Management Systems.

Partners: Missouri Department of Natural Resources, Missouri Recycling Association, business, industry and their organizations.

Potential Implementation Tasks:

- Assist manufacturers with waste audits and methods for decreasing the amounts of waste generated.

- 2b. State agencies should provide opportunities to update business leaders on waste issues and best available practices for reaching reduction goals.**

Current Programs and Activities: Journals, professional conferences, status quo procedures.

Partners: Missouri Department of Natural Resources, Missouri Recycling Association, business, industry and their organizations.

Potential Implementation Tasks:

- Government should set example by endorsing environmentally responsible practices.

B. Managing Waste as a Resource

For most of the twentieth century, changes in the management of solid waste focused on ensuring that safe methods of disposal were used. To prevent pollution and disease, laws and regulations were aimed at improving the siting, design and operation of disposal facilities. Although alternatives to disposal – reuse, recycling, composting – were practiced by some individuals and communities, these practices became the focus of change as the century came to a close. Much of this interest was initially driven by concern over the availability of disposal capacity. However, it quickly became clear that using alternatives to disposal resulted in the added environmental benefit of conserving raw materials and energy. In the twenty-first century it is time to strengthen the management of waste as a resource.

To plan for programs and services that address solid waste, it is important to consider the source of the waste. For example, solid waste from households will be somewhat different than solid waste generated by restaurants and other commercial establishments. Solid waste services for households may be provided by a city, either directly or through a contract, but services for businesses are usually provided by private businesses. From a planning perspective, it is important to consider differences in waste composition, decision-making processes and infrastructure needs. For this reason, the department worked with five stakeholder groups: residential, institutional, construction and demolition, commercial and industrial solid waste.

The actions outlined in this section of the plan have been organized into six categories:

All Generators – actions that are broad in scope and will have a positive influence on every type of solid waste generator.

Residential Solid Waste – actions that mainly target solid waste originating from private single-family or multiple family dwellings. The materials may include paper, cardboard, beverage and food cans, plastics, food wastes, glass containers, old clothes, yard wastes, furniture and appliances.

Institutional Solid Waste – actions that address waste materials originating in institutional facilities, such as government offices, schools, hospitals, nursing homes, correctional facilities, research institutions and public buildings. The materials may include packaging materials, food wastes, disposable products, office waste and other materials related to the institution's mission.

Commercial and Industrial Solid Waste – actions that focus on solid wastes generated by businesses. Businesses described as commercial activities would include offices, stores, retail and wholesale outlets, office buildings, markets, theaters and restaurants. Industrial solid waste includes all nonhazardous materials discarded from industrial operations or derived from industrial operations or manufacturing processes. These could also include small quantities of waste generated from cafeterias, offices, or retail sales departments on the same premises. Industrial waste may include wastes generated by activities such as agricultural operations, wholesale trade and mining.

Construction and Demolition Solid Waste – actions that are aimed at discarded materials resulting from the construction, remodeling, repair, or demolition of buildings, bridges, pavements and similar structures.

Recycling Market Development – actions that are designed to create and improve markets for materials collected for recycling. Recycling market development is key to sustaining the recycling efforts of all types of generators.

Organic Solid Waste – actions for managing the organic waste stream as a resource. Organic materials make up approximately 56 percent of the solid waste that Missourians discard in landfills and are part of each of the waste streams described above. These materials include paper products, food residuals, textiles, wood and yard waste. Organic materials are valuable resources and have great potential for reuse, recycling and energy recovery.

All Generators

Objective 1: Provide incentives that encourage the safe and environmentally sound management of all types of solid waste, minimizing disposal and maximizing resource conservation.

Actions

1a. Provide recognition programs for waste reduction, recycling, composting and other alternatives to disposal.

Current Programs and Activities: Efforts to minimize waste and recover resources are recognized annually by the Governor, the Missouri Recycling Association, the Missouri Waste Control Coalition and many of the solid waste management districts, as well as several other state and national organizations (Appendix H). The Solid Waste Management Program, Missouri Market Development Program and Outreach and Assistance Center help promote many of these awards, often assisting in the nomination or review process.

Partners: Missouri Department of Natural Resources, Missouri Recycling Association, Missouri Waste Control Coalition, National Recycling Coalition, U.S. Environmental Protection Agency, Solid Waste Association of North America, Choose Environmental Excellence, Solid Waste Management Districts, Environmental Education Association, business organizations, government organizations and environmental organizations.

Potential Implementation Tasks:

- Increase efforts by the department and its partners to expand awareness of these recognition opportunities for businesses, local governments and service organizations.
- Encourage business and government organizations to add environmental awards to their existing recognition programs.

1b. Provide tax incentives for recycling collection, recycling research and development, development of new recycled products, co-collection systems and waste-to-energy projects.

Current Programs and Activities: Missouri law (Section 144.030.2, RSMo) allows a tax exemption for equipment used in material recovery facilities. This section of the law also exempts machinery and equipment used directly in the manufacturing process if used in one of the following manners: plant expansion, new plant, design change or ingredient or component part. Although this exemption is available to all manufacturers, recycled product manufacturers can take advantage of it as well.

Partners: Missouri Department of Natural Resources, Missouri Market Development Program, Missouri Office of Administration, General Assembly, Governor and business organizations.

Potential Implementation Tasks:

- Convene an advisory group with representatives of the appropriate partners to investigate additional tax exemptions aimed at increasing resource recovery.
- Work with partners to increase awareness of the existing tax exemptions.

1c. Encourage the use of deposits for beverage containers to increase recycling of aluminum cans, plastic bottles and glass bottles.

Current Programs and Activities: Currently there are no container deposit laws in Missouri. Legislators have made proposals for this type of program, but have not been successful in getting them passed. To provide guidance to the Governor's office, the legislature and the general public, the department regularly researches this topic. For any deposit legislation, it is important to evaluate how the system will affect the existing recycling infrastructure, since aluminum cans have traditionally provided reliable revenue to both public and private recycling centers.

Partners: Missouri Department of Natural Resources, General Assembly, Governor, business associations and solid waste and recycling organizations.

Potential Implementation Tasks:

- Continue to research feasibility of a container deposit law for Missouri. The Iowa Beverage Container Deposit Law is a good model to consider.
- Convene a work group with partners to determine what the barriers and opportunities are for using deposits to increase container recovery.

Objective 2: Provide financial assistance for programs and activities designed to reduce, reuse, recycle, compost or recover energy from solid waste.

Actions

- 2a. Direct grants and other financial assistance toward projects which meet the greatest needs of Missouri's waste reduction infrastructure. This would include reuse, recycling, composting and waste to energy projects. Funds should be provided for recycling start-ups or venture businesses, and technical research and development.**

Current Programs and Activities: State Project Grants, District Grants and Missouri Market Development Program financial assistance were established in 1990 to help create or expand alternatives to disposal. This assistance has been provided to both public and private entities engaged in a wide variety of activities: recycling collection services; research and development; solid waste audits; yard waste processing; and waste diversion technical assistance. In 2005, legislation removed the State Project Grants but did not effect the funding opportunities from District Grants or the Missouri Market Development Program.

Partners: Missouri Department of Natural Resources, Missouri Market Development Program, Target Advisory Committee, Solid Waste Management Districts and solid waste organizations.

Potential Implementation Tasks:

- Work with the solid waste management districts and the Missouri Market Development Program to target gaps in Missouri's waste reduction and recycling infrastructure.
- Work with districts, the Missouri Market Development Program and other partners to evaluate the greatest needs for new programs or services.

- 2b. Garner venture capital from the private sector to help create a commercially viable recycling industry.**

Current Programs and Activities: Through a partnership with the Mid-America Council of Recycling Officials, the U.S. Environmental Protection Agency's Jobs Through Recycling program held an investment forum to which several Missouri businesses were invited. The forum brought together potential investors with recycling entrepreneurs with the goal of bringing private investment into the recycling business arena.

Partners: Missouri Department of Natural Resources, Missouri Recycling Association, Mid-America Council of Recycling Officials, U.S. Environmental Protection Agency, recycling industry, business and industry and their organizations.

Potential Implementation Tasks:

- Work with partners to find new opportunities for private investment in recycling and other waste diversion activities.
- Work with U.S. Environmental Protection Agency and other partners to bring additional recycling investment forums to the Midwest region.

2c. Use federal funds for technical research of alternatives to disposal.

Current Programs and Activities: The department has not pursued the use of federal funds specifically for this purpose. In general, funds from federal agencies have been limited in scope.

Partners: U.S. Environmental Protection Agency, U.S. Department of Agriculture, U.S. Department of Energy, National Science Foundation, Missouri Market Development Program and numerous stakeholders.

Potential Implementation Tasks:

- Research the availability of federal and private foundation funds for waste diversion technical research.
- Work with partners to ensure that information regarding the availability of these funds is widely disseminated.

Objective 3: Provide technical assistance to citizens, local governments, non-profit organizations, institutions and businesses in order to assist them in reducing solid waste at the source and using alternatives to disposal.

Actions

3a. Create solid waste management cross-department databases, including available solid waste services, financial assistance and other resources.

Current Programs and Activities: The department's Solid Waste Management Program maintains lists of many solid waste and recycling services, primarily based on permitted facility information and biennial service inventories submitted by the solid waste management districts. The information from the solid waste management districts focuses on services for residential waste. The Missouri Market Development Program publishes a directory of recycled products and markets for recovered materials.

The department's Outreach and Assistance Office has compiled a List of Assistance Providers, which includes a wide range of public and private environmental services. For the last several years, the State Recycling Coordinator, housed in the Office of Administration's Division of Purchasing and Materials Management, has maintained a list of environmentally preferable products, including recycled content items, available on state contract. These products can be easily purchased by state offices, political subdivisions and quasi-public governmental bodies through the Cooperative Procurement Program.

Partners: Missouri Recycling Association, Missouri Department of Natural Resources, other state agencies, recyclers, consultants, business organizations and solid waste organizations.

Potential Implementation Tasks:

- Convene a work group with partners to determine what information is needed to have a more complete inventory of solid waste recovery information, including types and amounts of materials recovered.
- Work with partners to provide assistance to recycling centers in locating and securing markets for collected material.
- Continue to gather residential service information from the solid waste management districts.
- Develop lists of solid waste recovery opportunities for other types of generators: institutional, commercial, industrial, construction and demolition.
- Develop lists of financial assistance opportunities available to each type of generator and distribute to each.
- Work with the department's Outreach and Assistance Center to ensure that the List of Assistance Providers includes comprehensive solid waste information.
- Develop Web sites which present the full range of solid waste assistance for each major category of solid waste generator. The Missouri's Business Information Source Resource Library, maintained by the University of Missouri Outreach and Extension, provides an excellent model.
(www.missouribusiness.net/library.asp)

3b. Provide model contracts for solid waste services that provide dollar incentives for waste reduction and recycling.

Current Programs and Activities: The department's Solid Waste Management Program has conducted research into model contracts in response to specific requests.

Partners: Missouri Department of Natural Resources, U.S. Environmental Protection Agency, local governments, Missouri Recycling Association, Missouri Waste Control Coalition and solid waste industry.

Potential Implementation Tasks:

- Work with partners to compile model contracts currently in use, and to develop new models where necessary. Take advantage of research already completed by the U.S. Environmental Protection Agency and others in areas such as Resource Management, Less is More, and Pay-As-You-Throw.
- Conduct outreach activities to distribute these where needed. Use the existing information networks, such as business or government journals, to promote this resource.

3c. Promote model programs and best practices.

Current Programs and Activities: In 1991, the department's Solid Waste Management Program published the Model Plan Guidelines for Comprehensive Solid Waste Management. The Model Plan provided technical guidance for planning a range of programs: waste prevention, reuse, recycling, composting, education and disposal. Although aimed primarily at helping the newly created solid waste management districts with regional planning, the Model Plan also was distributed to cities and counties to help local decision-makers.

Two editions of the Decision Makers' Guide to Solid Waste Management have been published by the U.S. Environmental Protection Agency, the most recent in 1995. This guide covers the full range of solid waste management options, from source reduction to landfill siting. The U.S. Environmental Protection Agency has also developed guides for individuals, businesses and schools.

Several organizations, research institutes and agencies in other states have developed excellent guidance for solid waste management. The National Recycling Coalition, Solid Waste Association of North America and the Institute for Local Self Reliance are just a sample of the sources for assistance on how to reduce waste and ensure its safe disposal.

The department primarily distributes this type of guidance in response to specific requests or at conferences and other public venues.

Partners: Missouri Department of Natural Resources, Missouri Recycling Association, Missouri Waste Control Coalition, U.S. Environmental Protection Association, Solid Waste Association of North America, National Recycling Coalition, Association of State Territorial Solid Waste Management Officials and solid waste, recycling, business and service organizations.

Potential Implementation Tasks:

- Expand efforts to compile information and guidance on best practices in solid waste management. Revise the Model Plan Guidelines for Comprehensive Solid Waste Management.
- Work with partners to develop effective methods of distributing this information to each type of solid waste generator.
- Work with partners to create a Peer-to-Peer match program, similar to the Association of State Territorial Solid Waste Management Officials' Comprehensive Environmental Response, Compensation and Liability Act Program Peer Match Directory. This comprehensive directory contains contacts in states and territories possessing expertise in various Comprehensive Environmental Response, Compensation and Liability Act Program areas.

3d. Promote the use of waste audits to help design and evaluate programs.

Current Programs and Activities: In the comprehensive planning guidance developed by the department, solid waste audits are recommended to help both public and private facilities identify opportunities for waste prevention and resource recovery. In this context, the term waste audit is used to describe a process of evaluating the amounts and types of solid waste generated and the purchasing practices which impact waste generation and management.

District Grants and State Project Grants have been directed at solid waste audits for businesses, organizations, schools, correctional facilities and universities across the state. Through this process, recommendations can be made for reducing waste at the source and for recycling, composting or waste-to-energy programs.

The department's Environmental Assistance Office's On-site Assessment Team provides environmental compliance and pollution prevention assistance to small business owners, farmers, local governments and the general public on ways to control or reduce wastes. The team can help facilities identify compliance issues, develop a pollution prevention plan, identify energy conservation opportunities, optimize manufacturing processes, and identify recycling opportunities.

To evaluate solid waste management for the state as a whole, solid waste characterization studies were conducted in the late 1990s with the support of State Project Grant funds (Appendix D). This information has been key to establishing priorities for financial assistance and policy development for the state.

Partners: Missouri Department of Natural Resources, Missouri Market Development Program, Missouri Recycling Association, Missouri Waste Control Coalition, business organizations, government organizations and the Missouri Office of Administration.

Potential Implementation Tasks:

- Increase efforts to promote the use of solid waste audits.
- Work with partners to create affordable technical assistance for waste audits.
- Work with partners to create a train-the-trainer program for each type of waste generator.

Residential Solid Waste

Objective 1: Increase source reduction and reuse of residential waste.

Actions

1a. Create or expand community source reduction programs.

Current Programs and Activities: National and state trends indicate that the amount of municipal solid waste generated will continue to rise. The U.S. Environmental Protection Agency estimates that by 2010, Americans will generate more than 4.8 pounds per person per day. In response to this trend, the Source Reduction Forum of the National Recycling Coalition has produced Making Source Reduction and Reuse Work in Your Community: A Manual for Local Governments.

The Forum designed this guide for local solid waste managers, recycling coordinators, elected officials, policy makers and interested citizens. Drawing upon the experience of more than 90 communities, the report includes a discussion of lessons learned, how-to strategies and 22 case studies of the most innovative and effective local government source reduction programs around the country. The department has promoted this approach by placing source reduction at the top of Missouri's Integrated Waste Management Hierarchy. To encourage local programs, the department distributes this and other similar guidance materials.

Partners: Missouri Department of Natural Resources, local governments, Regional Planning Commissions and Solid Waste Management Districts.

Potential Implementation Tasks:

- Develop more proactive methods for distributing guidance documents.
- Work with partners to create appropriate grant targets for District Grants and other funding opportunities.
- Include in training programs for local governments.

1b. Create new reuse programs and promote existing opportunities.

Current Programs and Activities: Traditional reuse activities can be found across the state: Salvation Army Stores, Goodwill Stores, flea markets, yard sales, thrift shops. Some local libraries collect used books, some charities focus on collecting specific materials, such as shoes or toys. The department includes reuse in its guidance for local solid waste planning. The department also promotes reuse by distributing fact sheets and brochures addressing this topic.

State Project Grants and District Grants have provided support for these types of programs. Examples include the city of Independence Reuse Workshop Project to collect bicycles, appliances, furniture, lawn equipment or electronics and the city of Lemay Bulk Waste Project to collect bulky items for reuse by local organizations.

Partners: Missouri Department of Natural Resources, Solid Waste Management Districts, Missouri Recycling Association, Missouri Waste Control Coalition, civic organizations and volunteer networks.

Potential Implementation Tasks:

- Compile information on reuse opportunities across the state and develop effective method of distribution.
- Conduct research to develop comprehensive guidance for local development of reuse programs. Take advantage of the resources available through the Reuse Development Organization, a national non-profit organization promoting reuse on every level.
- Encourage civic and service organizations to conduct special collections for non-traditional reusables, such as eyeglasses, cell phones and athletic shoes.

Objective 2: Increase the number of communities using unit or volume-based solid waste collection systems, Pay-as-You-Throw, to create financial incentives for waste reduction and resource recovery.

Actions

2a. Provide technical assistance to help create or expand Pay-as-You-Throw solid waste collection systems.

Current Programs and Activities: The department has supported Pay-as-You-Throw as an excellent way to increase recovery and decrease disposal of residential waste. Efforts to promote this concept have included providing information on request and funding grant projects designed to increase Pay-As-You-Throw systems. Through one of the State Project Grants, a tool kit was developed to assist Missouri communities in planning and implementation of a Pay-As-You-Throw system.

The Water and Environmental Program of the U.S. Department of Agriculture has made grants available to nonprofit organizations to provide technical assistance and training to assist rural communities with their solid waste problems. Two organizations in Missouri have received these grants, the Midwest Assistance Program and Associated Recyclers of the Midwest.

Partners: Missouri Department of Natural Resources, Missouri Recycling Association, Missouri Waste Control Coalition, Solid Waste Association of North America and the U.S. Environmental Protection Agency.

Potential Implementation Tasks:

- Work with partners to determine what the obstacles are for adopting Pay-As-You-Throw programs in Missouri.
- Work with partners to create full cost accounting and Pay-As-You-Throw training for local governments.
- With input from private haulers, develop outreach and training for adopting Pay-As-You-Throw by private service providers.
- Conduct research to determine additional resources, like the U.S. Department of Agriculture’s program, which may be available to Missouri communities.

2b. Provide financial assistance to help create or expand Pay-As-You-Throw solid waste collection systems.

Current Programs and Activities: Through State Project Grants and Solid Waste Management District Grants, a few communities have been given financial assistance to help establish Pay-As-You-Throw systems. There is no ongoing program directed specifically at this effort.

Partners: U.S. Environmental Protection Agency, Missouri Department of Natural Resources, Solid Waste Management Districts, local governments, Target Advisory Committee, public and private haulers.

Potential Implementation Tasks:

- Work with partners to create appropriate grant targets for District Grants.
- Conduct research to determine if additional financial resources are available.

Objective 3: Maximize recycling collection opportunities and ensure that residential recycling programs are sustainable.

Actions

3a. Provide technical assistance to create, expand and improve residential recycling programs.

Current Programs and Activities: Beginning with the development of the Model Plan Guidelines for Comprehensive Solid Waste Management, the department has provided guidance to cities, counties and solid waste districts for planning residential recycling programs. The department’s Environmental Management Institute has included recycling in many of the sessions aimed at local environmental managers.

Missouri communities have also benefited from training conducted by the Missouri Recycling Association, the Missouri Waste Control Coalition and the Missouri Chapter of the Solid Waste Association of North America. Technical assistance for residential recycling has been a major focus for solid waste management districts.

Partners: Missouri Department of Natural Resources, Missouri Recycling Association, Missouri Waste Control Coalition, Solid Waste Association of North

America, U.S. Environmental Protection Agency, local governments, Solid Waste Management Districts, residential haulers and recycling managers.

Potential Implementation Tasks:

- Work with public and private haulers to determine what types of technical assistance are needed.
- Research and compile technical information and guidance materials, taking advantage of sources such as the Local Government Environmental Assistance Network and Institute for Local Self Reliance.
- Continue to work with partners to sponsor training programs such as Solid Waste Association of North America's Collection Efficiencies: Getting More For Less.
- Develop a peer-to-peer match program for local governments in Missouri to share their expertise.
- Promote volunteer networks to help staff recycling drop-off centers, or to conduct special collections for non-traditional recyclables, such as textiles, computer disks and polystyrene loose fill packaging.

3b. Provide financial assistance for communities and private haulers to help create, expand and improve recycling collection services for residential waste. Place greater emphasis on projects designed to improve efficiency and ensure sustainability.

Current Programs and Activities: A large portion of the funding available from State Project Grants and District Grants has been directed toward residential recycling programs. The types of projects have included equipment procurement, constructing buildings for recycling centers and promotional campaigns.

The U.S. Department of Agriculture's Water and Environmental Program provides loans, grants and loan guarantees for solid waste (as well as drinking water, sanitary sewer and storm drainage) facilities in rural areas and cities and towns of 10,000 or less.

Partners: Missouri Department of Natural Resources, Solid Waste Management Districts, Missouri Recycling Association, Missouri Waste Control Coalition, U.S. Environmental Protection Agency and the U.S. Department of Agriculture.

Potential Implementation Tasks:

- Conduct research and survey haulers and recycling managers to determine where financial assistance should be targeted.
- Garner input from partners to develop grant target recommendations for District Grants.
- Conduct research to determine if additional financial resources are available.

Institutional Solid Waste

Objective 1: State and local governments provide leadership through their policies and practices for managing the solid waste they generate.

Actions

1a. Adopt comprehensive waste reduction policies.

Current Programs and Activities: For state government, waste reduction policies were first addressed by the Missouri Policy for Resource Recovery in May of 1989. Later that same year, House Bill 438, et al, created statutory requirements for state agency recycling and waste reduction policies (Section 34.032.5, RSMo). The Missouri Inter-departmental Committee on Waste Reduction and Resource Recovery was formed and a policy adopted in December 1989 (Appendix G).

While many cities and counties have adopted waste reduction policies, a comprehensive list of these is not available.

Partners: Missouri Office of Administration, Missouri Department of Natural Resources, Environmental Improvement and Energy Resources Authority, Missouri Interagency Recycling Committee, Legislature, local governments, Missouri Municipal League and the Missouri Association of Counties.

Potential Implementation Tasks:

- Work with partners to review state policies for managing solid waste generated at state facilities. Include policies for procurement and budgeting.
- Survey local governments to determine which cities and counties have policies in place and what areas the policies address.
- Work with partners to compile or develop model procurement policies and contracts for state and local governments. The Local Government Environmental Assistance Network is one source for this type of technical information.

1b. Evaluate current waste reduction programs.

Current Programs and Activities: Each year the State Recycling Coordinator works with the Missouri Interagency Recycling Committee members and Environmental Improvement and Energy Resources Authority to produce the State of Missouri Recycling and Waste Reduction Report. This report gives the status of recycling programs in state offices and establishes goals for the following year. Information in the report includes the amounts and types of materials collected for recycling, source reduction efforts and procurement of recycled content products.

The State Recycling Coordinator has conducted waste sorts at several facilities to help evaluate their waste reduction programs. Additionally, presentations were made to Missouri Office of Administration managers regarding the types and amounts of waste at state facilities and tips for waste reduction and cost savings.

While an evaluation process may be a component of waste reduction programs in local governments, this information is not available at a statewide level. Several facilities have benefited from waste audits funded by State Project Grants or District Grants.

Partners: Missouri Office of Administration, Missouri Department of Natural Resources, Environmental Improvement and Energy Resources Authority, Missouri Interagency Recycling Committee, Governor, Legislature, local governments and Solid Waste Management Districts.

Potential Implementation Tasks:

- Expand waste audits for state and local government facilities.
- Work with partners to provide guidance for waste reduction program review, including the procurement process.
- Investigate other sources of financial or technical resources available for state or local governments.

1c. Create or expand source reduction, reuse, recycling, composting and waste-to-energy programs for government facilities.

Current Programs and Activities: House Bill 438, et al, also created requirements for recycling collection programs in state offices. Collection programs for offices located in Jefferson City were immediately implemented and have been adopted in out-state locations where local services are available. Examples include state parks and the department's regional offices.

In addition to recycling collection, a comprehensive waste reduction program should address source reduction, reuse, composting and recycling market development. The Missouri State Agency for Surplus Property provides reuse opportunities for state and other public agencies in Missouri. These include cities, counties, schools and public health facilities. The Missouri State Agency for Surplus Property manages discarded furniture, supplies and equipment from both state and federal sources in Missouri.

The Department of Corrections has been making great progress in adding food waste composting programs to their waste reduction efforts. In several cases, they have received support from State Project Grants or District Grants.

Although several local government facilities have received financial assistance for waste reduction programs from State Project Grants or District Grants, more comprehensive information is needed to determine the number or type of programs at the local level.

Partners: Missouri Office of Administration, Missouri Department of Natural Resources, Environmental Improvement and Energy Resources Authority, Missouri Interagency Recycling Committee, Legislature, local governments, Solid Waste Management Districts, Missouri Recycling Association.

Potential Implementation Tasks:

- Continue partnership between the Missouri Department of Natural Resources, Office of Administration and Missouri Interagency Recycling Committee to further develop recycling programs for state offices.
- Provide guidance and technical assistance for source reduction programs for state and local governments.
- Create work groups from appropriate state or local agencies to improve surplus programs.
- Provide guidance for procurement programs which incorporate waste management principles.

1d. Increase awareness of accomplishments in waste reduction.

Current Programs and Activities: The annual State of Missouri Recycling and Waste Reduction Report provides the type of information needed, but distribution is primarily within state government. Recently the Office of Administration's State Recycling Coordinator conducted a series of media presentations throughout the state via radio and public broadcast systems, courtesy of the Department of Mental Health. The Office of Administration's State Recycling Coordinator has also set up information displays at a number of conferences held in the state.

There are a variety of ways that local programs are promoted: cities and counties may produce annual reports; information may be provided directly to local media; or activities may be highlighted in newsletters produced by solid waste management districts, Missouri Recycling Association, Choose Environmental Excellence chapters or other environmental organizations.

Partners: Missouri Office of Administration, Missouri Department of Natural Resources, Environmental Improvement and Energy Resources Authority, Missouri Interagency Recycling Committee, Legislature, local governments, Choose Environmental Excellence and the media.

Potential Implementation Tasks:

- Work with the Missouri Interagency Recycling Committee to improve reporting of waste reduction accomplishments.
- Work with the State Recycling Coordinator and public information staff to promote government activities.
- Encourage government office participation in Earth Day and other environmental events open to the public.
- Work with partners to include information about government waste reduction activities in their newsletters.

Objective 2: Institutions of all types maximize their waste reduction, reuse and recycling.

Actions

2a. Evaluate programs in place for major types of institutions: health care, correctional, research facilities or other similar facilities.

Current Programs and Activities: Although waste audit projects have been funded through both State Project Grants and District Grants, these involved a relatively small number of institutional facilities statewide. Better information is needed to fully evaluate the number and level of programs in place.

Partners: Missouri Office of Administration, Missouri Department of Natural Resources, public and private institutions, Missouri Recycling Association and Solid Waste Management Districts.

Potential Implementation Tasks:

- Use surveys to compile general information on programs in the institutional sector.
- Work with partners to develop teams which can provide comprehensive program reviews.
- Provide training for waste audits to evaluate current programs and find opportunities to increase diversion.
- Work with solid waste management districts to develop appropriate grant targets for District Grants.

2b. Provide technical assistance to create, expand or improve waste reduction programs that complement or enhance the institution's primary mission.

Current Programs and Activities: Guidance material is available from the EPA, the department, the National Recycling Association and other state and local sources. This material may be distributed upon request, or at meetings and conferences. The On-site Assessment Team, a service of the department's Environmental Assistance Office, has provided direct technical assistance to several institutional facilities (see also Action 3d under All Generators).

The solid waste management districts and the Missouri Recycling Association have also provided assistance in this area. State Project Grants and District Grants have been used to purchase equipment and supplies, provide training or conduct planning activities.

Some institutional organizations have been very active in providing assistance. One example is Hospitals for a Healthy Environment. Hospitals for a Healthy Environment is a national voluntary program designed to help health care facilities enhance work place safety, reduce waste and waste disposal costs and become better environmental stewards and neighbors. Hospitals for a Healthy Environment

is a joint project of the American Hospital Association, the EPA, Health Care Without Harm and the American Nurses Association.

Partners: Office of Administration, Missouri Department of Natural Resources, Environmental Improvement and Energy Resources Authority, Missouri Interagency Recycling Committee, Missouri Recycling Association, Missouri Waste Control Coalition, public and private institutions and institutional organizations.

Potential Implementation Tasks:

- Continue to research best practices for each major category of institution: government offices, residential facilities, health care facilities, correctional facilities and educational facilities. The California approach to waste reduction in schools provides a good model. They seek to develop programs where academics, administration, and facilities work collaboratively to incorporate resource conservation and sustainability into their organizational philosophy, planning, and implementation.
- Compile or develop guidance customized for each category.
- Work with partners to provide train-the-trainer workshops at meetings and conferences of institutions and their respective organizations.
- Use existing institutional manager networks to disseminate information and guidance.
- Work with solid waste management districts to develop appropriate grant targets for District Grants.

2c. Increase the reuse of institutional waste.

Current Programs and Activities: Institutions have access to publicly and privately operated waste exchanges. These include the Industrial Material Exchange Program, operated by the Illinois Environmental Protection Agency, and Industry Online Central, operated by Haz Waste, Inc.

Some institutions, such as schools and colleges, can take advantage of many of the services offered by the Missouri State Agency for Surplus Property.

The department has promoted the use of waste exchanges as part of an integrated waste management program. Guidance and informational materials are distributed upon request. This topic has also been promoted in conferences held by the Missouri Recycling Association and the Missouri Waste Control Coalition.

Partners: Missouri Office of Administration, Missouri Department of Natural Resources, Environmental Improvement and Energy Resources Authority, Missouri Interagency Recycling Committee, Missouri Recycling Association, Missouri Waste Control Coalition, Missouri State Agency for Surplus Property, public and private institutions and institutional organizations.

Potential Implementation Tasks:

- Research and compile information about successful institutional reuse programs in Missouri or other states.
- Provide information on existing waste exchange programs which will accept materials from institutions. Examples include the Surplus Exchange in Kansas City which accepts furniture and electronic equipment and the Sabre Foundation's Book Donation program which distributes books to libraries, universities, schools and similar institutions in more than 60 countries.
- Work with solid waste management districts to develop appropriate grant targets for District Grants.

Commercial and Industrial Solid Waste

Objective 1: Business and government adopt product stewardship policies and goals.

Actions

1a. Promote product stewardship concepts and principles.

Current Programs and Activities: According to the U.S. Environmental Protection Agency (EPA), product stewardship is “a product-centered approach to environmental protection...(which) calls on those in the product life cycle – manufacturers, retailers, users, and disposers – to share responsibility for reducing the environmental impacts of products.”

The department’s efforts to support product stewardship have been primarily through its participation in national and regional initiatives. The department’s Solid Waste Management Program staff participated in the National Electronic Products Stewardship Institute, joining nine other state solid waste officials in the group. Other participants included EPA, local governments, industry representatives and environmental organizations. The National Electronic Products Stewardship Institute was created to bring stakeholders together to develop solutions to the issue of electronic products management. Their efforts will be discussed further in the Special Solid Waste Issues section of the plan.

The department’s Solid Waste Management Program and the Missouri Market Development Program represent Missouri on the Mid-America Council of Recycling Officials. The Mid-America Council of Recycling Officials’ members collaborate to develop regionally effective programs and policies in recycling, recycling market development, and source reduction. The Mid-America Council of Recycling Officials is involved in a number of product stewardship activities. It is a member of the National Plastics Redesign Project, a design for recycling project. It also supports the efforts of the Midwestern Workgroup on Carpet Recycling and the Multi-Client Recycled Plastic Lumber Project, providing funds for the final testing of six ASTM standards for the lumber.

Several businesses in Missouri have joined organizations such as Choose Environmental Excellence, Missouri Recycling Association, and the EPA’s WasteWise program, showing their support for a range of environmental issues. Information on product stewardship is distributed by the department, the Missouri Market Development Program and solid waste management districts.

Partners: Missouri Department of Natural Resources, Missouri Market Development Program, Solid Waste Management Districts, Missouri Recycling Association, Choose Environmental Excellence, U.S. Environmental Protection Agency, University of Missouri Outreach and Extension, industries and industry organizations, retailers and retail organizations.

Potential Implementation Tasks:

- Continue support of national and regional efforts to promote product stewardship.
- Work with University of Missouri Outreach and Extension to add product stewardship information to the Missouri Business Development Network.
- Work with partners to develop successful promotional campaigns.
- Promote membership in Choose Environmental Excellence, Missouri Recycling Association, EPA WasteWise and other organizations that promote environmental stewardship.
- Encourage Missouri industries to participate in the EPA Design for the Environment Program, a government-industry partnership that seeks to incorporate environmental considerations into the design and redesign of products, processes and technical and management systems.

1b. Facilitate process of stakeholder input for policy and goal development.

Current Programs and Activities: Facilitated groups have played a key role in developing solid waste legislation, regulations and in the planning process. Examples include the Senate Bill 60 Rulemaking Advisory Group, the Public Participation Work Group, the Waste Tire Advisory Committee and the state plan stakeholder groups.

To ensure that State Project Grants supported Missouri's most critical infrastructure needs, the Target Grants Committee was established in 2000. Membership included representatives from solid waste management districts and both public and private entities involved in waste reduction, recycling and waste collection. The Target Advisory Committee worked closely with Solid Waste Management Program staff to develop the type and scope of projects eligible for funding in each grant cycle.

As described in the plan introduction, the plan stakeholder input process included both commercial and industrial stakeholder groups. Participants in both groups expressed support for continuing the process of facilitated discussion.

Partners: Missouri Department of Natural Resources, Missouri Market Development Program, Solid Waste Management Districts, Missouri Recycling Association, Choose Environmental Excellence, U.S. Environmental Protection Agency, University of Missouri Outreach and Extension, industries and industry organizations, retailers and retail organizations, consumers, Governor and legislators.

Potential Implementation Tasks:

- Compile or develop technical information which addresses stewardship of both products and packaging. Include the Less is More materials developed by the Midwest Assistance Program with the support of a State Project Grant.
- Work with partners to develop forums for policy discussion.
- Work with environmental and business organizations to integrate product stewardship into their conference and meeting agendas.
- Work with partners to obtain legislative consideration of product stewardship policies where appropriate.
- Encourage grant targets which will help sponsor stakeholder training.
- Investigate sources of funding that will enable business and government representatives to attend training in solid waste management policy.

Objective 2: Promote the establishment or expansion of waste-based businesses to increase waste diversion and enhance economic development.

Actions

2a. Research the impact of waste-based businesses on Missouri's economy.

Current Programs and Activities: The U.S. Recycling Economic Information Study was commissioned by the EPA and a number of states through a cooperative agreement with the National Recycling Coalition. The national study was accomplished through a comprehensive analysis of both existing economic data and reasonable estimates based on targeted surveys of recycling businesses and sophisticated economic modeling. The study allows for sound economic comparisons across different regions and states in the country and establishes an important benchmark of the economic impact of recycling and reuse.

The St. Louis-Jefferson Solid Waste Management District funded the St. Louis Metropolitan Area Recycling Economic Information Study through a District Grant to the University of Missouri. Modeled after the national study, this project evaluated the size and scope of the recycling, remanufacturing and reuse industries in the St. Louis Metropolitan Area.

Through the combined efforts of the department and the Missouri Market Development Program, funding was recently awarded to the University of Missouri to conduct a similar study for the state of Missouri. The project will evaluate and analyze the economic impacts of the waste reduction, reuse, and recycling industry statewide. This information will help to promote awareness of recycling and reuse. It will also help evaluate the current recycling infrastructure and indicate areas needing improvement.

Partners: Missouri Department of Natural Resources, Missouri Market Development Program, Solid Waste Management Districts, Missouri Department of Economic Development, reuse and recycling service providers.

Potential Implementation Tasks:

- Develop promotional materials based on the results of the Missouri study.
- Encourage additional research by universities and research centers.

2b. Promote industrial development that creates by-product synergy.

Current Programs and Activities: The United States Business Council for Sustainable Development describes by-product synergy as “creating and capturing value through matching producers of under-valued waste streams with users, and working with regulators to establish support for the process. By-product synergy promotes a shift from a waste disposal system to a reuse methodology, saving energy and cutting emissions.”

By-product synergy projects have been implemented in multiple states, as well as in Mexico and Canada. The most significant effort to date in Missouri was initiated by the Mid-America Regional Council Solid Waste Management District. The district’s first step involved working with Andy Mangan of the United States Business Council for Sustainable Development and a team of consultants to determine the feasibility of launching a BPS project in the Kansas City region. The feasibility study concluded that private and public sector leaders support the implementation of a yearlong project. The project team includes the Environmental Excellence Business Network, Mr. Mangan, the Elements consulting division of BNIM Architects, Franklin Associates and Bridging the Gap.

The implementation project will be led by Environmental Excellence Business Network’s recruitment of ten diverse companies as fee-paying participants and engage local, state and federal government agencies for support. Through extensive collaboration, individual companies will work together as a cross-industry team focused on turning every by-product into valuable new products. The synergies uncovered are expected to produce added revenues and cost savings, new business opportunities, and environmental and regulatory benefits to the group and to the region as a whole. Efforts are underway to secure project funding.

Partners: Missouri Department of Natural Resources, Missouri Market Development Program, Solid Waste Management Districts, Missouri Recycling Association, Choose Environmental Excellence, U.S. Environmental Protection Agency, University of Missouri Outreach and Extension, Missouri Department of Economic Development, U.S. Business Council for Sustainable Development, industries and industry organizations.

Potential Implementation Tasks:

- Compile or develop technical information to help promote by-product synergy.
- Work with partners to help create networking opportunities between potential industry partners.
- Promote the efforts of the Mid America Regional Council Solid Waste Management District and others creating by-product synergy partnerships.

- Work with partners to develop data bases which provide the by-product information needed to match generators with users, while addressing confidentiality concerns.
- Foster dialogue between developers and local governments to promote the establishment of eco-industrial parks that create new by-product synergies.

2c. Increase the use of existing reuse and recycling services by commercial and industrial generators.

Current Programs and Activities: The department, the Missouri Market Development Program and solid waste management districts regularly distribute information about reuse or recycling opportunities. This includes local recycling centers, waste exchanges, reuse centers and recycling end markets. By increasing our outreach efforts, more business waste will be recovered and reuse and recycling services will become more viable.

State Project Grants have funded waste audits to identify materials that can be reused or recycled, and projects to implement audit recommendations. Similar projects have been funded in several solid waste management districts.

Partners: United States Business Council for Sustainable Development, Missouri Market Development Program, Solid Waste Management Districts, Missouri Recycling Association, University of Missouri Outreach and Extension, Missouri Department of Economic Development, business and industry and supporting organizations, reuse and recycling service providers.

Potential Implementation Tasks:

- Work with state officials and agencies to develop an in-kind gift receipt for donations of discarded materials to non-profit organizations. The federal government uses a process that could serve as a model.
- Work with reuse and recycling service providers to improve the marketing of their services to the commercial and industrial sectors.
- Encourage research and development of processes needed for waste streams not previously managed through recycling.
- Work with partners to facilitate waste prevention and recycling at large entertainment venues. Assistance with establishing these programs is available from the National Association for PET Container Resources.

Construction and Demolition Solid Waste

Objective 1: Prevent solid waste through reuse of buildings.

Actions

1a. Promote building reuse and historic preservation.

Current Programs and Activities: The department's State Historic Preservation Office is responsible, in partnership with the U.S. Department of the Interior's National Park Service and local governments, for carrying out the mandates of the *National Historic Preservation Act* in Missouri. The State Historic Preservation Office works with citizens and groups throughout the state to identify, evaluate and protect Missouri's diverse range of historic, architectural and archaeological resources. Promoting historic preservation is a key component of the State Historic Preservation Office's efforts.

In addition to preserving structures with historic significance, it is important to reuse any empty or abandoned buildings whenever feasible. One example of this is the Missouri State Penitentiary in Jefferson City. The Missouri Office of Administration's Division of Design and Construction approached the American Institute of Architects - Missouri in 1998, asking for assistance in creating a plan for reuse of the historic prison. In the spring of 2000, a design charrette was held in Jefferson City to set goals and criteria for the redevelopment plan. In addition to state officials and staff, a Task Force including local civic and business leaders participated. Following the charrette, the Task Force assisted with selection of a principal planning consultant. An initial plan was developed and should proceed when funding is secured.

Partners: United States Business Council for Sustainable Development, Solid Waste Management Districts, Missouri Office of Administration, Missouri Recycling Association, U.S. Green Building Council, State Historical Society, American Institute of Architects chapters, local governments, architects, construction businesses and organizations and builders.

Potential Implementation Tasks:

- Continue to promote historic preservation, including the contribution it makes to solid waste management in Missouri.
- Work with partners to develop promotional materials for building reuse.
- Work with media and partners to disseminate promotional materials effectively.

1b. Provide technical and financial assistance for building reuse and historic preservation.

Current Programs and Activities: The State Historic Preservation Office provides educational, technical and financial assistance for preservation and rehabilitation projects. Financial assistance includes federal matching grants, state and federal rehabilitation tax credits and the state Historic Preservation Revolving Loan Fund.

Certified Local Governments are an important part of the federal-state-local preservation partnership. The State Historic Preservation Office assists municipal and county governments in achieving certification and provides intensive training in the preservation of local resources to local historic preservation commissions.

The American Institute of Architects' Committee on the Environment works to sustain and improve the environment by advancing and disseminating environmental knowledge and values, and advocating the best design practices to integrate built and natural systems. Missouri hosts a state and three local chapters of the American Institute of Architects that have been active in promoting these concepts.

Partners: United States Business Council for Sustainable Development, Solid Waste Management Districts, Missouri Office of Administration, Missouri Recycling Association, U.S. Green Building Council, State Historical Society, American Institute of Architects chapters, local governments, architects, construction businesses and organizations and builders.

Potential Implementation Tasks:

- Conduct research on building reuse programs and compile or develop informational materials.
- Work with local governments, architects and builders to incorporate building reuse into community planning and development. The Rocky Mountain Institute has several guidance documents on its Web site, including Framework for Community Sustainability, Ten Ingredients for Long-Term Success.
- Research the availability of state, federal and private sources of financial assistance.

Objective 2: Reduce waste and increase recovery in construction and demolition processes.

Actions

2a. Promote waste reduction as part of the green building concept.

Current Programs and Activities: Sustainable or green building practices can reduce the tremendous impact that building design, construction and maintenance has on both people and nature. According to the U.S. Department of Energy's Center for Sustainable Development, buildings consume 40 percent of the world's

total energy, 25 percent of its wood harvest and 16 percent of its water. The building industry is the nation's largest manufacturing activity, representing more than 50 percent of the nation's wealth and 13 percent of its Gross Domestic Product. Energy and material consumption in buildings can contribute significantly to global climate change.

Sustainable building practices go beyond energy and water conservation to incorporate environmentally sensitive site planning, resource-efficient building materials and superior indoor environmental quality. The department has embraced this concept and occupies the first green building for state employees in Jefferson City, the Lewis and Clark State Office Building. This project represents a collaboration of department staff and administrators, elected officials, Office of Administration's Division of Design and Construction and a team of design experts. The new building's siting, design and operation is designed to minimize its impact on the environment by incorporating features: a location within the Missouri State Penitentiary Redevelopment site; building placement that is oriented to maximize daylighting of the interior and take advantage of passive solar heating; rain water collection and water-saving fixtures throughout the structure; high efficiency heating and air conditioning systems; and the use of materials with a high recycled content.

The EarthWays Home in St. Louis is a handsome Victorian residence, built in 1885, which was renovated in 1994 to preserve the building and to demonstrate environmentally sensitive building options. The EarthWays Home demonstrates practical, affordable and easily accessible ways homeowners and companies can cut resource consumption and reduce waste in building improvement and operation. Recycling features include indoor and outdoor composting systems and many examples of household products and furnishing made from recycled and sustainably produced material. Through tours and other activities, the home serves as an educational tool for green building techniques.

Partners: Missouri Office of Administration, Missouri Department of Natural Resources, Solid Waste Management Districts, Missouri Recycling Association, U.S. Green Building Council, U.S. Environmental Protection Agency, American Institute of Architects chapters, construction and demolition businesses and organizations.

Potential Implementation Tasks:

- Continue to promote green building concepts, including the success of the department's new office building.
- Work with partners to develop green building display materials.
- Create an information summary to highlight available incentives, guidance materials and collection options.
- Research and compile technical information on the latest technology.
- Compile lists of green building projects in Missouri to highlight their success.

2b. Expand processing of construction and demolition waste to increase resource recovery while protecting the environment.

Current Programs and Activities: There have been several attempts to establish collection and processing sites for construction and demolition waste in Missouri. To encourage this activity, Missouri regulations were revised in 1997 to allow a permit exemption for this activity. In some cases the projects have been successful, but some have resulted in large piles of materials which could not be marketed and numerous nuisance complaints. Although department staff can provide technical assistance to help prevent these problems, this help is not always sought. New efforts are needed to help make these projects successful.

Partners: Missouri Office of Administration, Missouri Department of Natural Resources, Solid Waste Management Districts, Missouri Recycling Association, Missouri Waste Control Coalition, U.S. Green Building Council, American Institute of Architects chapters, construction and demolition businesses, organizations and recyclers.

Potential Implementation Tasks:

- Compile or develop guidelines for construction and demolition waste processing.
- Work with partners to determine how best to get information to the appropriate audience.
- Work with partners to fund research and development to ensure marketability of processed materials.
- Work with local governments to ensure that local ordinances and policies support these activities while maintaining adequate protections.

2c. Promote and increase reuse opportunities for construction and demolition waste.

Current Programs and Activities: For many construction materials, the best way to manage discards is through reuse. Research has shown that during new construction, remodeling or demolition, significant quantities of usable materials are discarded. One of the most successful efforts to collect these materials is the Habitat ReStores. These stores sell quality used and surplus building materials, with proceeds going to fund the construction of houses by local Habitat for Humanity chapters.

All materials sold by Habitat ReStores were donated for that purpose, often from contractors with excess supplies, from demolition crews salvaging reusable materials, or from the general public. Habitat's most successful ReStores raise enough to build ten or more houses per year and divert thousands of tons of usable materials from disposal. Currently there are five ReStores operating in Missouri.

The annual Missouri Recycling Association conferences have included sessions on construction and demolition waste management, including the practice of deconstruction. Through deconstruction, buildings are selectively and

systematically disassembled, generating materials for reuse. Benefits go beyond the recovery of materials to include the creation of jobs and job skills.

Partners: Missouri Office of Administration, Missouri Department of Natural Resources, Solid Waste Management Districts, Missouri Recycling Association, Missouri Waste Control Coalition, U.S. Green Building Council, U.S. Environmental Protection Agency, American Institute of Architects chapters, construction and demolition businesses and organizations.

Potential Implementation Tasks:

- Compile information and guidance on deconstruction and other similar techniques.
- Work with partners to provide deconstruction training.
- Work with state and local governments to address construction and demolition debris reuse in their policies and procedures.
- Promote the donation of materials to available outlets.
- Encourage the establishment of reuse centers where needed.

Recycling Market Development

The purpose of recycling market development is to increase the use of recovered materials in the manufacture of products. The use of recyclable materials by industries as feedstocks results in the efficient use of Missouri's resources in Missouri manufacturing, job creation and energy conservation.

Objective 1: Create new markets and strengthen existing markets for recovered materials in Missouri.

Actions

1a. Promote the purchasing of recycled-content products by individuals, businesses, institutions and government offices.

Current Programs and Activities:

- RSMo 34.032 and 34.031 describe standards for certain recycled-content purchases for state government.
- The Missouri Market Development Program distributes a directory of recycled content products and provides marketing assistance.
- The Missouri Market Development Program offers buy-recycled procurement training to governments, businesses and organizations.
- The Office of Administration's Division of Purchasing maintains a list of environmentally preferable products available on statewide contract.
- The Office of Administration coordinates a cooperative purchasing program for local government entities.
- The Office of Administration coordinates the Missouri Interagency Recycling Committee that shares information about buying recycled in state government.
- The National Recycling Coalition established the Buy Recycled Business Alliance, a group of organizations committed to increasing the procurement of recycled content products through education and leadership by example.
- Solid Waste Management District Grants

Partners: Missouri Department of Natural Resources, Missouri Market Development Program, Solid Waste Management Districts, Missouri Recycling Association, National Recycling Coalition, Missouri Office of Administration, Chambers of Commerce, business organizations, Missouri Department of Economic Development, University of Missouri Outreach and Extension.

Potential Implementation Tasks:

- Public awareness; information and training designed for specific audiences: business, institutions, local government; marketing assistance for Missouri recycled products.
- Development of a Missouri recycled product manufacturers network to promote recycled-content products.
- Determine whether there are types of recycled-content products currently unavailable for which there exists consumer interest.

- Assess consumer and manufacturer perceptions about recycled-content products in order to design strategies to increase purchase.
- Develop and implement a large-scale Missouri Recycled Product Promotion effort similar to Department of Agriculture program for Missouri products.
- Expand or develop new cooperative purchasing programs for recycled-content products.
- Revise building codes and standards to permit an increase in the use of recycled materials in construction.
- Develop and implement demonstration projects including recycled-content products.
- Expand the Department of Economic Development's Web-based Missouri Marketplace to include the ability to search for recycled-content products.
- Develop alliances with merchants to promote recycled-content products in stores.
- Conduct an annual Missouri Recycled Products Trade Show similar to the California model.

1b. Create financial and other incentives for market development and publicity.

Current Programs and Activities:

- The Missouri Market Development Program provides financial assistance to recycled-content product manufacturers and to processors of recyclable material.
- The Solid Waste Management District Grants may provide opportunities for market development financial assistance.

Partners: Missouri Market Development Program, Missouri Department of Natural Resources, Missouri Department of Economic Development, Solid Waste Management Districts, and industrial and commercial organizations.

Potential Implementation Tasks:

- Assess actual capital gaps in market development financing to determine appropriate financial incentives.
- Identify and develop appropriate incentives for research and development, materials and product testing.
- Develop and implement outreach and education to investment community to encourage investment in manufacturing businesses that use recovered materials as feedstocks.
- Develop a range of financing opportunities for recycled product manufacturers, possibly including: tax-exempt bond financing, equity financing, royalty financing, and low-cost loans.

1c. Conduct periodic review of recyclable material(s) marketability.

Current Programs and Activities: Missouri Market Development Program technical assistance is available to evaluate specific material marketability in relation to proposed or existing manufacturing ventures.

Partners: Missouri Market Development Program, Missouri Department of Natural Resources, Missouri Department of Economic Development, Missouri Recycling Association, University of Missouri Outreach and Extension, Solid Waste Management Districts and recyclable materials processors and brokers.

Potential Implementation Tasks:

- Develop material monitoring procedures and performance indicators.
- Conduct and distribute a quarterly review of general recycling material trends.
- Review and provide an annual report regarding specific recyclable materials.
- Develop opportunities for increased communication between various market components and stakeholders.
- Evaluate the possibility of tying financial incentives to market monitoring and reporting requirements.
- Utilize geographic information system capabilities to provide information about materials activity.

1d. Develop local end-use markets.

Current Programs and Activities: Primarily accomplished through grant-funded projects and technical assistance upon request.

- The Missouri Market Development Program offers financial and technical assistance to support local end use market development.
- The Solid Waste Management District Grants may be available to support local end use market development.
- The Kansas City Byproduct Synergy Initiative is a large-scale project intending to match local waste streams with users.
- The Missouri Market Development Program distributes the Industrial Materials Exchange Service's directory.
- Some start-up waste exchanges are underway in Missouri.

Partners: Missouri Market Development Program, Missouri Department of Natural Resources, Missouri Department of Economic Development and local economic development organizations, Solid Waste Management Districts, local governments, businesses, University of Missouri Outreach and Extension and Missouri Enterprises.

Potential Implementation Tasks:

- Promote financial assistance currently available; promote technology transfer of viable local end-use options.
- Provide financial assistance specifically targeted to local markets.
- Evaluate specific local market feasibility for material markets.
- Integrate solid waste planning with local community planning and eco-industrial planning to encourage development of recycling related business.
- Track material flows in specific communities and regions, identify materials in specific local areas with significant potential for increased diversion, and identify additional factors such as job pool, siting that provide opportunities for local market development to facilitate planning for use of waste as feedstock.

- If successful, replicate Kansas City Byproduct Synergy effort in other areas of the state.
- Improve existing or develop new local waste exchange opportunities.
- Evaluate the possibility of providing community economic development grants tied to recycling-related businesses similar to the Massachusetts model.
- Consider development of waste-to-energy facilities based on local waste streams.

1e. Help manufacturers of recycled products adopt technologies or processes to help increase efficiency, productivity and profitability.

Current Programs and Activities: The Missouri Market Development Program provides technical assistance to businesses, government and organizations in a variety of areas. Through contracts with the University of Missouri Extension, field staff are available for both on-site assistance and research services.

Partners: Missouri Market Development Program, University of Missouri Outreach and Extension, Missouri Enterprises and recycled product manufacturers.

Potential Implementation Tasks:

- Determine and provide appropriate incentives and resources for recovered material manufacturing research and development.
- Provide resources for materials and product testing.
- Streamline permitting processes for recycled product manufacturers and material processors.
- Provide siting and permitting assistance to materials processors and recycled product manufacturers.
- Establish recyclable material or recycled product cooperatives to take advantage of cooperative market efficiencies.
- Develop standards and specifications for collected recyclable materials to support manufacturing efficiency, productivity and profitability.
- Provide in-facility workshops for manufacturers to assess opportunities for recycled product manufacturing.

1f. Create more recycled products.

Current Programs and Activities:

- The Missouri Market Development Program provides financial and technical assistance to support the development and manufacture of recycled-content products.
- The Solid Waste Management District Grants may be available to support the development and manufacturing of recycled-content products.

Partners: Missouri Market Development Program, Missouri Department of Natural Resources, Missouri Department of Economic Development, Solid Waste Management Districts and Missouri Enterprises.

Potential Implementation Tasks:

- Evaluate material-specific product development opportunities in Missouri by evaluating material flows and manufacturing capacity.
- Identify existing manufacturers that could convert to recovered material feedstock and provide information and incentives for them to do so.
- Provide additional resources for research into new uses for recovered materials.
- Increase the promotion of available resources and incentives to potential recycled-product manufacturers.
- Consider product stewardship initiatives as a means by which to encourage industry to recycle product materials into new products.

1g. Financial assistance to support end markets, for new market research and development, for advertising recycled products and for business subsidies to encourage use of recycling markets.

Current Programs and Activities:

- The Missouri Market Development Program provides financial and technical assistance to support recycled product manufacturing.
- The Solid Waste Management District Grants may be available to support market development.

Partners: Missouri Market Development Program, Missouri Department of Natural Resources, Solid Waste Management Districts, Missouri Enterprises and University of Missouri Outreach and Extension.

Potential Implementation Tasks:

- Identify specific capital investment gaps in order to address them effectively.
- Consider rebates for recycled-content product purchases to increase market prominence such as the Iowa compost model.
- Provide marketing assistance for manufacturers and distributors of recycled-content products.
- Consider tax or other incentives for manufacturers using recovered materials as feedstocks.
- Evaluate transportation networks to identify and correct inefficiencies in material flow.
- Consider regulatory requirements that support recycling markets such as landfill bans, bottle bills, material content specifications.
- Research the availability of other funding sources for recycling market development.

Organics in Solid Waste

Objective 1: Reduce a significant amount of the organic waste that is currently being disposed in landfills.

Actions

1a. Encourage programs and activities that reduce the amount of organic materials destined for landfills.

Current Programs and Activities: Source reduction or waste prevention of organics in solid waste is generally defined as reducing waste which enters the solid waste disposal or management system. More simply put, the waste remains and is managed on-site. The University Extension's Don't Bag It program is designed to reduce the amount of grass clippings by cutting grass higher. The program is designed to help homeowners save mowing time and money by not having to purchase bags or pay for yard waste removal. Along with mowing at a higher setting, other aspects of yard waste reduction options include planting native species that require less water and less fertilizer. Community programs that distribute home composting bins at little or no cost also effectively reduce the amount of yard waste that would otherwise need to be managed by a larger scale operation. The Missouri Department of Natural Resources also provides informational brochures on effective yard waste management.

Another type of waste prevention option for organic material is a food bank program. One organization, America's Second Harvest, has affiliates in Columbia, Kansas City, Sikeston, Springfield, St. Joseph and St. Louis. The Kansas City affiliate, Harvesters, serves as Kansas City's only food bank and has worked to feed the hungry in its community for over 20 years.

In 1997, the Missouri Department of Natural Resources' Solid Waste Management Program provided grant funding to Harvesters to purchase refrigeration units in two trucks to expand their ability to rescue and distribute prepared food that otherwise would otherwise have been sent to a landfill.

Partners: Missouri Department of Natural Resources, University of Missouri Outreach and Extension, food banks and participating municipalities.

Potential Implementation Tasks:

- Research and compile information about successful waste prevention programs.
- Continue to promote and endorse activities that reduce the amount of organic material generated.
- Promote the donation of materials to available outlets.

1b. Encourage programs and activities that divert organic materials from disposal in landfills through reuse.

Current Programs and Activities: For many organic materials, the optimum management method is through reuse. The Habitat for Humanity ReStores have demonstrated growing success in the reuse of many organic materials. Habitat for Humanity ReStores are building supply stores that accept and resell quality new and used building materials. ReStores generate funds to support Habitat's building programs, while reducing the amount of used materials that are headed for landfills.

The ReStores offer lumber, windows, doors, paint, hardware, tools, lighting fixtures and other items for sale to the public. Individuals also can donate reusable building materials such as the items listed above. Retailers and manufacturers can donate end-of-line, scratch-and-dent, discontinued inventory, paint mis-tint and customer returns to a ReStore and avoid the cost of returning them to the manufacturer. Habitat for Humanity ReStores located in Jefferson City, Kansas City, St. Louis and Springfield, Missouri have all been recipients of State Project Grants. (Also See: Construction and Demolition Solid Waste, Action 2c)

Partners: Missouri Department of Natural Resources, Missouri Market Development Program and Solid Waste Management Districts

Potential Implementation Tasks:

- Continue to promote and endorse activities that reuse waste destined for landfills.
- Promote the donation of materials to available outlets.
- Promote the establishment of reuse centers where needed.

Objective 2: Recover a significant amount of the organic waste that is currently being disposed in landfills.

Actions

2a. Encourage the effective recycling of organic materials from the waste stream.

Current Programs and Activities: Recycling organic materials can be a highly effective management option. This is especially true if there is a ready market for the organic material. In 1991, City of Springfield set out to attract businesses and industries to Springfield that use recycled materials in the manufacturing process.

As a result, CanBrands, now Nestle Purina PetCare, established a plant in Springfield to make cat litter out of old newsprint. CanBrands wanted a municipality or region that would ensure a stable, cheap supply of used newspaper. Meanwhile, Springfield wanted a company to recycle its 125 to 150 tons of monthly newsprint. On April 21, 1999, CanBrands opened in Springfield. The company worked with the city to establish an educational program to encourage the residents to participate in paper recycling.

CanBrands received Waste Reduction and Recycling Grant funds in Fiscal Year 1996 and Fiscal Year 1997 for equipment, recycling containers and a transport vehicle to assist with packaging cat litter made from recycled newspaper. In June of 1999 and again in 2000, the Missouri Market Development Program provided market development grant funds to purchase equipment.

The Solid Waste Management District Grants are available for waste diversion and recovery programs. The Missouri Market Development Program also provides funding to assist with developing markets for products made from recovered materials.

Partners: Missouri Department of Natural Resources, Solid Waste Management Districts and Missouri Market Development Program.

Potential Implementation Tasks:

- Continue to endorse and promote programs that use recovered organic waste in the production of new products.

2b. Continue encouraging the use of composting to produce rich organic soil amendments from organic materials such as food residuals, wood waste and yard wastes.

Current Programs and Activities: Composting is considered an environmentally sound method of managing the many different forms of organic waste. Several composting systems including static piles, windrows and in-vessel are all viable composting methods. While composting may appear to be a straightforward operation, difficulties do arise in practice, especially in large-scale operations. Some of the major concerns that must be dealt with on larger sites include off-site discharge of water, odors, vector control, noise, litter, and fire prevention. No matter which composting system is implemented, it is essential that the program is well maintained and managed.

A well maintained and operated in-vessel composting system provides controls that address most problems associated with composting. Reeds Spring High School began operating a state-of-the-art in-vessel composting system in 2001. Along with other equipment, the system is expected to help the school district recycle its food and paper wastes.

The Missouri Department of Natural Resources provided a grant of \$100,000 and the Southwest Missouri Solid Waste Management District provided a \$15,000 grant toward the project. Since early January 2001, the in-vessel composter has been taking three feedings a week of the school district's 900 pounds-per-day generation of food wastes and 100 pounds per day of paper wastes. The compost is used in the high school's botany and greenhouse classes on campus and for various landscaping needs among the school district's buildings and grounds.

Partners: Missouri Department of Natural Resources, Solid Waste Management Districts, composting businesses, municipalities and institutions.

Potential Implementation Tasks:

- Continue to endorse and promote programs that compost organic waste.
- Conduct research on best management practices for compost sites and compile or develop informational materials.
- Compile list of composting facilities in Missouri to provide informational materials and highlight their successes.

2c. Develop and update information regarding composting for individuals, businesses and decision-makers.

Current Programs and Activities: Various brochures, fact sheets, technical bulletins and guide books have been developed by the Missouri Department of Natural Resources or with department resources.

Partners: Missouri Department of Natural Resources and University of Missouri Outreach and Extension, composting businesses and organizations.

Potential Implementation Tasks:

- Continue to provide up-to-date information regarding composting of organic materials.
- Research and compile composting information for individuals, businesses and decision-makers.

2d. Develop educational seminars and workshops regarding composting for individuals and businesses.

Current Programs and Activities: The Master Composter Program is a community education program about resource conservation through composting. Participants may receive as much as 40 hours of free training about home composting. Participants leave the training knowledgeable about yard waste composting and how to use the finished compost. In return for the training, Master Composters agree to share their knowledge and skills with others by volunteering their time to community outreach. Programs have been started in the greater St. Louis metropolitan area, Rolla, Branson, Springfield, Kansas City, Columbia and other places in the state.

Partners: Missouri Department of Natural Resources and University of Missouri Outreach and Extension, composting businesses and organizations.

Potential Implementation Tasks:

- Advertise the Master Composter Program as a community resource recovery educational program.
- Research and compile composting training opportunities.
- Encourage individuals, composting businesses, state and community decision-makers and solid waste managers and officials to attend training as opportunities become available.

2e. Encourage use of organic materials from municipal solid waste to produce energy when the organic materials cannot be reused, recycled or composted.

Current Programs and Activities: Northwest Missouri State University's Maryville, Missouri, power plant burns both wood waste and recycled paper to create steam that is used to cool and heat the entire campus rather than using natural gas.

The wood waste comes from various industries, such as sawmills and furniture manufacturers located within the northwest Missouri area. Recycled paper from both the campus and the city of Maryville is pelletized or condensed into chalk-sized bits before being burned at the power plant.

Partners: City of Maryville, Northwest Missouri State University, Missouri Department of Natural Resources, Solid Waste Management Districts, Missouri waste-to-energy facilities, colleges and universities.

Potential Implementation Tasks:

- Actively promote greater use of wood waste, paper waste and other organic waste in the production of energy.

2f. Encourage economically sustainable capture and use of methane gas in Missouri landfills.

Current Programs and Activities: Methane is collected from the Fred Weber Inc. landfill to provide heat to the Pattonville High School. The Pattonville Project started officially in January 1997. It is expected to save the district \$30,000 annually (at 1997 natural gas prices) and provide heat for the school for at least 40 years.

A 3,200-foot pipeline takes the gas to the school property. At no cost, Fred Weber, Inc. provided the first 2,000 feet to the school. The final 1,200 feet of pipeline and converting the school boiler to methane use cost the school district \$150,000. A two percent loan from the Department of Natural Resources and a \$25,000 grant from St. Louis County covered this cost.

Gas is collected through a series of perforated pipes that extend from the surface to near the bottom of the landfill. The interconnected grid of pipes is then connected to a blower system that provides the gas directly to the school. A garlic odor is injected to alert people to possible leaks. The gas itself does not need to be upgraded for use.

Partners: Pattonville High School, Fred Weber Landfill, St. Louis County, Missouri Department of Natural Resources, Missouri sanitary landfill owners and operators, local governments and institutions and Solid Waste Management Districts.

Potential Implementation Tasks:

- Assess opportunities to establish economically sustainable methane gas collection systems at Missouri landfills, and assist in the creation of economically sustainable landfill methane projects in Missouri.
- Provide technical information and assistance to landfill operators who wish to explore opportunities to capture methane gas for energy use.
- Help landfill gas-to-energy developers find financing, apply for state and federal grants, and assist in understanding options and requirements in state and federal regulations.
- Consider providing financial incentives to help initiate projects that have long-term technical and economic viability.
- Promote landfill methods that facilitate future waste recovery and methane capture.
- Support the U.S. Environmental Protection Agency's Landfill Methane Outreach Program, a voluntary assistance and partnership program that helps facilitate and promote the use of landfill gas as a renewable energy source. The Landfill Methane Outreach Program builds partnerships between state agencies, industry, energy service providers, local communities and other stakeholders.

C. Safe Disposal Practices

Managing waste as a resource places the emphasis on alternatives to disposal. Environmentally protective disposal facilities are still needed for materials that cannot be realistically managed except through disposal. We are challenged to protect our communities and environment by ensuring that waste that cannot be managed any other way goes to a permitted landfill or processing center and not into a ditch or sinkhole.

Meeting this challenge involves a combination of tactics. By ensuring that landfills and processing centers are sited, designed, constructed and operated according to federal and state standards, the potential for negative environmental impacts is greatly reduced. When permitted facilities fail to follow the requirements, enforcement action may be taken. Enforcement also is needed to stop those who illegally dump, burn or otherwise handle solid waste in ways that cause pollution. It is our goal to ultimately get the facility back into compliance through education and persuasion. Penalties and litigation are only used when it is necessary to level the playing field for those who are managing waste properly. No one should get an economic advantage by doing things wrong.

States like Missouri with U.S. Environmental Protection Agency-approved permitting programs designed to meet certain protective requirements can provide disposal facility owners and operators additional flexibility in permitting such as location, design, operation, corrective action, closure and post-closure care and financial assurance. This flexibility helps to hold down costs for private and public solid waste services, which helps to control disposal costs for our citizens. By keeping these costs down, illegal dumping behavior is less widespread.

Infectious waste is also regulated in Missouri and includes needles, body tissue, organs, body parts and body fluids from hospitals and clinics who treat patients infected with diseases such as Hepatitis B, Hepatitis C and HIV. Processing permit applications are reviewed and issued for infectious waste facilities to ensure this waste is properly handled and accidental exposure does not occur.

Some older landfills have not been properly closed and the responsible party is either deceased, gone or does not have the resources to properly close the facility. The department is attempting to properly close them in order to reduce any environmental risks and health hazards associated with the facility. Several owners of closed landfills have requested and received our approval to use closed landfills as golf courses, shooting ranges, equipment-storage sites or radio tower locations.

Standards for disposal facilities have evolved throughout the twentieth century. Staff maintains technical knowledge through research to evaluate the advantages and disadvantages of practices like bioreactor landfills, landfill mining and plasma arc technology as time and resources allow.

In addition to those activities integral to the processing and issuance of permits for the various solid waste facilities and ensuring that all requirements are met through enforcement, the following objectives have been identified as important or essential to the activities the agency carries out in support of safe disposal practices.

Permitted Facilities

The department's Solid Waste Management Program issues permits for construction and operation of new facilities and modification and expansion of existing facilities. The department also regularly inspects and provides technical assistance and necessary enforcement to these facilities. This oversight helps to ensure that facilities are built and operated in a manner that does not present a nuisance and is protective of human health and the environment.

Permitted facilities are those disposal areas and processing facilities that must comply with requirements contained in the Missouri Solid Waste Management Law and Regulations. A solid waste disposal area is any area used for disposal of solid waste from more than one residence or one or more commercial, industrial, manufacturing, recreational or governmental operation. Permitted disposal areas include sanitary landfills, demolition landfills, utility waste landfills and special waste landfills. These landfills employ an engineered method of disposing of solid wastes on land in a manner that minimizes environmental hazards.

Siting a landfill is a complex and lengthy process. Permit applicants must take into consideration economics, local ordinances, geography, geology, hydrology and climate when making siting decisions. As well, neighborhood resistance to a proposed site may develop at anytime before, during, or after the permitting process.

The department's Geological Survey Program provides oversight and approval of investigations of the soils, geology and hydrogeology for proposed sites, an important feature of the landfill siting process. This includes looking for geologic structures such as faults and sinkholes. This step is important in that it helps ensure that waste is isolated from aquifers where people obtain their drinking water.

Currently active are twenty-four sanitary landfills, four demolition landfills, five utility waste landfills and three special waste landfills.

Processing facilities are those facilities where solid wastes are salvaged and processed. They include transfer stations, some incinerators, and material recovery facilities. Currently active permitted processing facilities in Missouri include forty-seven transfer stations, three infectious waste processing facilities, three material recovery facilities, and one composting facility.

Objective 1: Promote alternative waste disposal and management.

Actions

1a. Encourage energy use plans in landfill permits.

Current Programs and Activities: Although the department has no authority to mandate energy use plans, landfills are encouraged to recover methane for energy wherever practical. The expiration of federal tax credits for methane recovery

remains a big obstacle towards further development of these resources. For further information, please see Organics in Solid Waste, Objective 2, Action 2f.

Partners: Missouri Department of Natural Resources, U.S. Environmental Protection Agency and regulated community.

Potential Implementation Tasks:

- Include energy recovery guidance in the department's Solid Waste Technician Certification classes.
- Encourage the Missouri Waste Control Coalition, Solid Waste Association of North America and other organizations to include sessions on energy recovery at their annual conference.

1b. Promote waste collection services in areas not presently served by collection services such as green boxes.

Current Programs and Activities: Private haulers serve the majority of the unincorporated areas in rural Missouri. Due to the low population densities or road conditions in some of these areas, curbside solid waste collection is not available to all rural residents. Unfortunately, this increases the occurrence of people using their own – or a neighbor's – property to dump their waste. One way to address this issue is for the hauler to place a large container, or green box, in a location that is easily accessible to several residents and the hauler.

In 1997, Missouri's solid waste regulations were revised to remove all regulatory obstacles to the use of green boxes. This allows these centralized drop-off locations to operate without the burden of unnecessary regulation.

Partners: Missouri Department of Natural Resources, solid waste haulers, local governments and Solid Waste Management Districts.

Potential Implementation Tasks:

- Provide information and technical guidance for setting up green box systems.
- Encourage local governments and solid waste management districts to work with private haulers to provide this service to their residents.

1c. Promote siting of more construction and demolition landfills.

Current Programs and Activities: The agency does not have the authority to promote the siting of facilities; we can only evaluate applications as they are submitted to us. Free-market principles dictate the types and locations of proposed facilities.

Partners: Missouri Department of Natural Resources, regulated community and Solid Waste Management Districts.

1d. Streamline regulations and permitting process to more easily use by-products and resources.

Current Programs and Activities: Current law and regulations exempt recovered materials from regulation as a solid waste. This avoids the need for permits or other approvals when utilizing these resources, as long as they are handled in a manner that will not create a public nuisance or adversely affect the public health. The requirements for the beneficial reuse of solid wastes have already been streamlined to a significant degree for a number of high-volume waste streams, most notably fly ash and cement kiln dust.

Partners: Missouri Department of Natural Resources, industries and industry organizations and environmental organizations.

Potential Implementation Tasks:

- Survey industries to determine the regulatory barriers.
- Work with partners to develop proposals for regulatory revisions that increase resource recovery while protecting the environment.

New Technologies

New technologies for solid waste management are being developed continuously. The department continues to work with stakeholders to assess the effectiveness of these new technologies in areas such as methane gas recovery, bioreactor landfilling, and landfill mining, to name a few.

Objective 1: Pave the way to new, cleaner, safer, and more cost-efficient methods of managing solid waste in Missouri.

Actions

1a. Research and develop lower cost alternatives for landfill mining.

Current Programs and Activities: The department does not have the resources necessary to conduct such activities. Research conducted elsewhere is available from the EPA's Technology Innovation Program.

Partners: Missouri Department of Natural Resources, U.S. Environmental Protection Agency, solid waste industry, universities and other research centers.

Potential Implementation Tasks:

- Compile available research results and make this information available to landfills in Missouri.
- Encourage the solid waste industry, universities and other appropriate research centers to conduct research into this and other methods of recovering resources from landfills.

1b. Research and develop innovative ways to properly close and maintain old landfills that do not have financial assurance instruments.

Current Programs and Activities: The department's Solid Waste Management Program has designed and overseen several landfill closures with an emphasis on minimal post-closure care. While all aspects of the design may not have met current statutory and regulatory design, the actions taken have resulted in significant improvements to localized environmental impacts.

One example is the wetlands leachate treatment at the JZ Demolition Landfill near Wright City, Missouri. This treatment system, designed and constructed for approximately \$100,000, has resulted in contaminant reductions of 50 percent or more since it became operational. There are essentially no ongoing operation and maintenance costs; conventional treatment, such as pumping and hauling to a treatment plant, would have expended the entire post-closure fund after approximately two years. The wetland has been in place for three years, and has a virtually limitless lifespan.

The Solid Waste Management Program was awarded a grant from EPA to close a landfill near Lamar, Missouri. The landfill leachate and sediment were discharging into a tributary of an impaired waterway. The closure was successful and will require only minor maintenance. Another landfill in north-central Missouri was closed with oversight of the court and the Solid Waste Management Program allowing one of the responsible parties, using an inadequate financial assurance instrument, to contract for the design of and all labor for proper closure of the landfill. There is some money left for post-closure maintenance.

Partners: Missouri Department of Natural Resources, Missouri Department of Conservation, U.S. Fish and Wildlife Service, University of Missouri - Rolla, Extension Center, Local Soil Conservation Districts, Judicial System and Contractors.

Potential Implementation Tasks: If future funds become available, there are a number of possible research projects that could be pursued. Among the most promising are alternative cap designs utilizing plants that uptake leachate and filter out toxics (phytoremediation) to control and treat leachate. Solid Waste Management Program staff is continuously looking for innovative ways to close these old landfills properly.

1c. Design future landfills as planned resource recovery facilities.

Current Programs and Activities: The EPA sets the minimum standards for landfill design, allowing specific areas of flexibility for states that have a EPA-approved permitting program. Significant changes will have to be made to federal requirements to facilitate this type of design approach in Missouri's permitting process.

Partners: U.S. Environmental Protection Agency, Missouri Department of Natural Resources, solid waste industry, Missouri Waste Control Coalition and Solid Waste Association of North America.

Potential Implementation Tasks:

- Encourage Missouri Waste Control Coalition and Solid Waste Association of North America to address this approach to landfill design at conferences and other training.
- Compile information on model facilities in Missouri or other states.

Illegal Dumping Enforcement and Prevention

Illegal open dumps create a public nuisance, divert land from more productive uses, depress the value of surrounding land, and pose health, safety and environmental problems. Complaint investigators in the regional offices investigate complaints regarding illegal dumping of solid waste and work with responsible parties to clean up sites. Complaints may be filed anonymously on the program's Internet Web site.

Objective 1: Work toward having a cleaner environment and use of safe disposal methods.

Actions

1a. Allocate funding sources toward illegal dumping.

Current Programs and Activities: The majority of the department's cases, complaints and investigations relate to illegal dumping. The department's Solid Waste Management Program works with local prosecutors and uses surveillance cameras to catch and prosecute illegal dumpers. The program has developed and distributed a manual for local governments that outlines how to develop an enforcement program to prevent and prosecute illegal dumping. The program also worked with volunteer and non-profit organizations to educate them in ways to prevent dumping in their areas. The Waste Tire Fund education portion has been utilized to develop brochures, hire contractors, hold workshops, etc., related to illegal dumping of tires and solid waste.

Partners: Local governments, Missouri Department of Natural Resources, contractors and Solid Waste Management Districts.

Potential Implementation Tasks: There is currently no funding for cleanup of these unsightly, dangerous sites where dumping is occurring. A program somewhat like the Waste Tire Program has been suggested as a way to clean up these sites. Some of the solid waste management districts have made inroads into identifying the dumpsites and getting volunteers to help with cleanup. However, with limited funding, this is not always an option.

1b. Enforce littering laws and educate constituents and voters regarding anti-littering campaign.

Current Programs and Activities: Department staff work with the Missouri Department of Transportation to help enhance their Adopt-a-Highway program. We are also represented on the No MOre Trash group by a staff member to work out ways to get the word out and change people's behavior and perspectives. No MOre Trash is a joint effort of the Missouri Department of Transportation and the Missouri Department of Conservation to raise awareness and increase citizen involvement in keeping roads, highways and public lands litter free.

Partners: Local governments, volunteer groups and other state agencies.

Potential Implementation Tasks:

- Continue to promote the No MOre Trash program.
- Support expansion of the Adopt-a-Highway program.

1c. Enhance enforcement activities to prevent illegal dumping, enforce existing laws and increase inspections.

Current Programs and Activities: This action is resource dependent. With less resources, the focus needs to be on doing things differently not just more often. The department is currently working on a compliance strategy that takes into consideration limited resources and will focus attention on areas most needing attention. The department's Solid Waste Management Program is also looking at priorities in the program and the regions.

The Solid Waste Management Program has conducted focused enforcement activities, such as the Illegal Dumping Enforcement Initiative where the program worked with one of the department's regional offices to deter illegal dumping by construction and demolition companies in the area. It was a six-month blitz where the staff worked nights and weekends to discover the dumping when it was occurring. The initiative was very successful and made a lot of companies aware of the law and its repercussions. The surveillance camera project is another example that is currently being implemented.

Partners: Missouri Department of Natural Resources, solid waste industry and local governments.

Potential Implementation Tasks:

- Continue to use focused enforcement activities like the Illegal Dumping - Enforcement Initiative.
- Work with partners to plan similar efforts targeting other types of wastes that are commonly dumped illegally.
- Continue development of the surveillance camera project.

1d. Regulators focus on long-term solutions and either ease or strengthen regulations. Look at the possibility of legislative action.

Current Programs and Activities: We are currently looking at our inspection and enforcement policy manual for needed changes. Long-term solutions are always being developed within the program. Examples are the many beneficial use exemptions given to promote reduction, reuse or recycling of materials that were previously sent to landfills. Another approach are the innovative enforcement tools that replace fines with supplemental environmental projects that help with

research or involve actions which improve the environment. Also, when setting up agreements with responsible parties or the court, the program always looks ahead to prevent setting precedents that do not look at long-range consequences or opportunities.

Partners: Missouri Department of Natural Resources, Attorney General's Office, industry, responsible parties, Secretary of State's Office-Administrative Rules and scoping groups.

Potential Implementation Tasks: The Solid Waste Management Program is conducting a transfer station survey to ascertain the daily problems and issues and to assist in finding ways to meet those needs in an environmentally friendly way. This activity will likely result in rule amendments.

Technical Assistance

An important element in the successful completion of the Department of Natural Resources' mission is providing technical assistance to all Missouri citizens. The Solid Waste Management Program works to help individuals, the regulated community, and other governmental groups better understand and comply with solid waste rules and regulations. The program hosts an annual landfill forum at which program staff and landfill owners and operators meet to discuss a wide variety of issues. The program and the department's five regional offices offer technical assistance through face-to-face meetings, correspondence, and telephone contacts. The program continues to work on the development of new and better ways to provide technical assistance.

Objective 1: Provide technical assistance and guidance to businesses, governments, and individuals regarding solid waste permitting and enforcement issues.

Actions

1a. Establish and maintain open lines of communication with the regulated community and the general public with respect to technical matters.

Current Programs and Activities: Although no specific named program exists regarding technical assistance, staff, on a daily basis, maintain routine communications with various constituents in support of this mission. This routine action not only maintains current lines of communication, but the very availability of staff and our quick response time fosters new partnerships as well.

Partners: Missouri Department of Natural Resources, general public and regulated community.

1b. Develop and maintain appropriate workshops regarding technical issues.

Current Programs and Activities: The Solid Waste Management Program currently holds an annual landfill forum to discuss technical issues of mutual concern to the agency and regulated community. The program also conducts certification classes for operators of landfills. Other workshops on starting environmental enforcement programs were held for local governments.

Partners: Missouri Department of Natural Resources, permitted landfills, local governments, permitted transfer stations and consulting engineers.

Potential Implementation Tasks: The success of the landfill forum is driving a desire to establish a similar type of forum for transfer stations and for consulting engineers who carry out solid waste work in the state. The Solid Waste Program is conducting a transfer station survey to ascertain the problems and issues that are being met daily and ways to meet those needs in an environmentally friendly way.

D. Special Solid Waste Issues

This section focuses on addressing wastes that may be difficult to manage; present special handling, disposal and public health problems; or have been banned from Missouri landfills. The wastes discussed in this section are composed primarily of two waste streams, household hazardous waste and items banned from Missouri landfills. Each material presents its own set of challenges and must be addressed individually. Typically these waste types can or have the potential to be recycled or beneficially reused, thereby providing an opportunity to increase the amount of material diverted from disposal in landfills.

While a Household Hazardous Waste Plan for Missouri has been developed (Appendix I), there are certain household hazardous waste items that were viewed as requiring close attention in this plan due to the immediate health and environmental hazards that they posed.

The first household hazardous waste material addressed is actually a group of items categorized as mercury-containing products. Mercury exists in three forms: elemental mercury; inorganic mercury compounds, primarily mercuric chloride; and organic mercury compounds, primarily methyl mercury. All forms of mercury are quite toxic, and each form may cause different health problems. Elemental mercury is the primary form of mercury being addressed in this section. There are numerous products in our homes or personal vehicles that contain elemental mercury. These include batteries, fluorescent lamps, tilt switches, thermometers and thermostats.

The next household hazardous waste category is End-of-Life Electronics. End-of-Life Electronics are electronics that have become obsolete as a result of developing technology, resulting in an increasingly large waste stream. Computers and televisions contain a number of toxic and hazardous material. Cathode ray tubes found in monitors and terminals contain lead, cadmium and other metals. Printed circuit boards contain chromium, lead, beryllium, mercury, cadmium, nickel, zinc, silver and gold. Batteries found in desktop computers, laptops and portable printers may contain nickel, cadmium, copper and sometimes caustic electrolytes. Mercury may also be found in the relays and switches found in desktop computers, monitors, TV picture tubes and terminals. Lead makes up about 25 percent of the weight of monitors and usually causes a monitor's cathode ray tube to exceed the Toxicity Characteristic Leaching Procedure for lead.

In order to conserve landfill space, promote recycling and reduce the chance of environmental contamination, several items have been banned from landfills. These include major appliances, lead-acid batteries, used oil, whole tires and yard waste. Although banned from disposal in Missouri landfills, these materials still need to be managed in a way that will not harm the environment. Additionally, because each of the banned items has unique characteristics in and of themselves, each must be managed in a manner different from the others.

Household Hazardous Waste

Household hazardous wastes are products or wastes discarded from homes that have hazardous characteristics, such as corrosivity, ignitability, reactivity or toxicity.

The Missouri Department of Natural Resources and the Environmental Improvement and Energy Resources Authority were given the responsibility to administer the management of household hazardous waste as well as agricultural hazardous waste. The primary focus for the Missouri Department of Natural Resources and the Environmental Improvement and Energy Resources Authority is to provide for the establishment of an education program and plan for the collection of household hazardous waste on a statewide basis.

Because of the relationships among the wastes and the disposal needs, the Missouri Department of Natural Resources and the Environmental Improvement and Energy Resources Authority added conditionally exempt small quantity generators' hazardous waste and do-it-yourselfer used oil collection to the planning process. Conditionally exempt small quantity generators can be businesses, manufacturers, local governments, schools and healthcare facilities.

The Missouri Department of Natural Resources formed an internal steering committee in 1996 with representatives from the Environmental Improvement and Energy Resources Authority and various offices in the Air and Land Protection Division and the Water Protection and Soil Conservation Division, formerly the Division of Environmental Quality. The purpose of this committee was to guide the process and timing for writing the plan.

A technical advisory group was also formed in 1996 with interested persons from outside the Missouri Department of Natural Resources. The purpose of the technical advisory group was to broaden the exchange of ideas on household hazardous waste issues. The department invited Missouri businesses, the solid waste industry, the farming community, local government offices and private individuals interested in proper management of household hazardous waste.

Conditionally exempt small quantity generators of hazardous waste can include local governments, schools, hospitals and businesses that produce small quantities of hazardous waste. Often, waste generated by conditionally exempt small quantity generators is similar in nature to household hazardous waste, although they are usually produced and accumulated in larger quantities.

Some hazardous wastes are considered Universal Waste. All universal wastes are hazardous wastes, but not all hazardous wastes are universal wastes. In order to be a universal waste, a hazardous waste must meet certain criteria established by EPA. Universal wastes, as defined in Missouri's rules, include batteries, pesticides, thermostats and mercury-containing lamps. (Appendix J)

By reducing administrative requirements, this rule is expected to save companies compliance costs and to reduce the amount of time spent on paperwork. The rule is expected to encourage collection and recycling programs that will result in more options to businesses, farmers and households for legal and cost-effective management and disposal of universal wastes.

1. Electronics

The consumer electronics waste stream is rapidly growing. This is due to an increase in the technological advances in computers and televisions. The problem is that the infrastructure for collecting, reusing and recycling electronics has not kept pace with this growing waste stream. The number of electronic products entering the waste stream is projected to increase dramatically unless reuse and recycling options expand.

A number of toxic and hazardous materials are found in computers and televisions. Cathode ray tubes found in televisions and computer monitors and terminals contain lead, cadmium and other metals. Printed circuit boards contain chromium, lead, beryllium, mercury, cadmium, nickel, zinc, silver and gold. Batteries found in desktop computers, laptops and portable printers can contain nickel, cadmium, copper and sometimes caustic electrolytes. Mercury can be found in the relays and switches in desktop computers, monitors, TV picture tubes and terminals. Lead makes up about 25 percent of the weight of monitors and usually causes a monitor's cathode ray tube to exceed the Toxicity Characteristic Leaching Procedure for lead. The Toxicity Characteristic Leaching Procedure is a testing method used to determine the hazardous characteristics or content of an item or material. Televisions would contain similar amounts of lead, depending on the style and size.

Objective 1: Maximize to the greatest extent possible, the collection, reuse and recycling of used electronics.

Actions

1a. Inform consumers of the hazardous nature of the materials in consumer electronics and encourage them to utilize recycling and reuse programs.

Current Programs and Activities: The department provides information regarding electronics upon request. Additionally, the department inspected facilities across the state that accept electronics, primarily computers and peripherals, for repair, reuse or demanufacturing. A list of these facilities is on the Solid Waste Management Program's Web site, along with a summary of options and requirements for handling electronics in Missouri.

Partners: Missouri Department of Natural Resources, Solid Waste Management Districts, consumers, recyclers, national and regional electronics waste organizations.

Potential Implementation Tasks: Increase and improve the department's efforts to share new information by posting it on the department Web site. Information on the site would include information about the hazardous components of common electronics and how they can adversely impact Missourians if not handled properly. Also included on the Web site would be links to regional and national organizations and programs including EPA efforts. Vital to this effort would be maintaining current contact information for those recyclers already listed on the Web site.

1b. Encourage the establishment of new and continued operation of existing electronics collection, recycling and refurbishing businesses.

Current Programs and Activities: Through district and state grants, assistance has been provided in establishing, expanding and funding electronics collection, recycling and refurbishing operations. The Missouri Market Development Program also provided financial and technical assistance to electronics recyclers and demanufacturing facilities.

Partners: Missouri Department of Natural Resources, Solid Waste Management Districts, Missouri Market Development Program, Missouri Department of Economic Development, local governments, retailers, manufacturers and recyclers.

Potential Implementation Tasks: Continue with current grant opportunities that would encourage the establishment of or enhance electronics collection, recycling and refurbishing operations. It is important to make an effort to maintain the competitive nature of the grants in order to increase the potential effectiveness and efficiency of the electronics collection, recycling and refurbishing projects being funded.

1c. Assist in the development of programs that encourage retailers to accept old electronics for recycling.

Current Programs and Activities: Staples and Best Buy have both had electronics recycling events. They have accepted anything from cathode ray tubes to VCRs. At a Staples event, customers who brought a product to be recycled received a discount on the purchase of a new item from the store.

Partners: Missouri Department of Natural Resources, Solid Waste Management Districts, retailers, recyclers, state and local government and manufacturers.

Potential Implementation Tasks: The department could work to bring retailers, manufacturers and recyclers together to set up cooperative arrangements beneficial to all parties. By pooling and using the existing resources and processes, promoting and executing consumer electronics collection programs at retailers could be a very cost-efficient way to manage electronics waste.

1d. Continue to participate in organizations that encourage product stewardship.

Current Programs and Activities: While there are no current programs in Missouri, the state participated in the National Electronics Product Stewardship Initiative. The Initiative was created to bring stakeholders together to develop solutions to the issue of electronic products management.

Product stewardship is a principle that addresses the need for industry, government, and consumers to promote the development and use of consumer products that pose increasingly fewer health and environmental impacts. The product stewardship approach provides incentives to manufacturers to consider the entire life-cycle impacts of a product and its packaging in product design, and to take increasing responsibility for the end-of-life products they produce. The challenge of product stewardship is to move beyond waste disposal toward zero waste and sustainable production.

Partners: Missouri Department of Natural Resources, U.S. Environmental Protection Agency, Solid Waste Management Districts, state and local governments, manufacturers, retailers and related associations, recyclers and consumers.

Potential Implementation Tasks: Continue involvement with national or regional cooperative efforts to address this issue. As outlined in the Electronics Product Stewardship Initiative of NEPSI, strive for the main goal: "...to develop a system, which includes a viable financing mechanism, to maximize the collection, reuse, and recycling of used electronics, while considering appropriate incentives to design products that facilitate source reduction, reuse and recycling; reduce toxicity; and increase recycled content."

An electronics waste workgroup would get input from stakeholders and research feasible financing mechanisms. This workgroup would also evaluate the infrastructure for this effort and make recommendations for improvement.

2. Mercury

Elemental mercury is found in many devices in homes, businesses and automobiles and is a subcategory under household hazardous waste. Exposure to elemental mercury poses both human health and environmental risks. It is important to reduce the potential harmful effects to citizens from mercury exposure and releases to the environment. Informing and educating the public about minimizing mercury exposure; promoting the elimination of non-essential uses and safe retirement of mercury, and improving scientific understanding and environmental monitoring are fundamental. The Solid Waste Management Program, the Hazardous Waste Management Program, the Outreach and Assistance Center and other departmental programs share the function of providing information regarding mercury.

Mercury-Containing Products

There are many mercury-containing items in homes, farms, labs, schools, medical facilities, and businesses. These include batteries, fluorescent lamps, mercury vapor lamps, tilt switches, thermometers and thermostats.

The department participates in the Missouri Mercury Task Force. This interagency task force includes staff from the Department of Conservation, U.S. Geological Survey, Department of Health and Senior Services, the Department of Agriculture and University Extension. This group seeks to better inform the public about minimizing mercury exposure, promote the elimination of non-essential uses and safe retirement of mercury, and improve scientific understanding and environmental monitoring of the mercury problem in Missouri. This group has developed goals and objectives. (Appendix K)

The New England Waste Management Officials Association has a great deal of information regarding mercury on their Web site. There is a Mercury-Added Products database that can be used to inform consumers, recyclers, policy makers and others about the amount and purpose of mercury in consumer products. The Web site also has model mercury education and reduction legislation and a compilation of mercury legislation in other states. It also has a searchable database that describes mercury reduction programs underway around the United States. The Web address is:
www.newmoa.org/Newmoa/htdocs/prevention/mercury.

The U.S. Environmental Protection Agency has a Safe Mercury Management Web page at www.epa.gov/epaoswer/hazwaste/mercury/index.htm. This web page has information about regional and state management programs for mercury and mercury wastes.

Objective 1: Educate the public on potential mercury dangers, sources of mercury, fish advisories, take-back programs, and safer alternatives.

Actions

1a. Develop and incorporate mercury instruction and educational materials for classroom use and distribution to public.

Current Programs and Activities: Upon request, the department distributes information related to mercury and its impact on human health and the environment. Not only does the department provide information specifically related to Missouri, but also refers to other state, federal and private sources for additional information.

Although Missouri hasn't developed a curriculum specific to mercury, the Center for Ecological Training in Pittsfield, Massachusetts, has done so. This curriculum is aimed at grades 4-8, and the relevant subject areas include science, social studies, math and health.

The University of Wisconsin Extension also has a Mercury in Schools curriculum, found at www.mercuryinschools.uwex.edu/curriculum/index.htm.

Partners: Missouri Department of Natural Resources, Missouri Department of Health and Senior Services, Missouri Department of Elementary and Secondary Education, U.S. Environmental Protection Agency and the Missouri Mercury Task Force.

Potential Implementation Tasks: The Missouri Mercury Task Force could evaluate the curriculum that was developed by the Center for Ecological Training and make recommendations. Based on those recommendations, Missouri could produce, distribute and implement a mercury-specific curriculum. This project would likely require funding outside of the state's operating budget.

1b. Provide ongoing information to the public regarding hazards of mercury as well as efforts in reducing mercury contamination.

Current Programs and Activities: The department's Environmental Assistance Office provides information regarding mercury and mercury-containing products, through a toll free phone line and printed materials. In the event of a mercury spill, citizens may contact the department's Environmental Services Program emergency response.

The department and other state agencies write articles for departmental publications.

Partners: Missouri Department of Natural Resources, Missouri Department of Health and Senior Services, Solid Waste Management Districts, Missouri Mercury Task Force, retailers, schools, medical and dental offices and associations.

Potential Implementation Tasks: The department could develop a mercury Web page on the its Web site that includes a list of mercury-containing products and mercury-free alternatives, a list of collection programs and recyclers for mercury-containing products and emergency spill information. This page could also include links to other Web sites that provide information about mercury and its hazardous nature.

In addition to the Web site, informational brochures and a public service announcement campaign could be part of a mercury awareness effort. This information can be made available to schools, pharmacies, medical and dental facilities and retailers that sell mercury-containing devices.

Objective 2: Reduce potential mercury exposures and releases to the environment.

Action

2a. Encourage use of non-mercury containing devices and increase recycling opportunities for mercury-containing products.

Current Programs and Activities: Upon request, the department distributes information regarding mercury-containing devices and their non-mercury alternatives.

At three public collection events in 2002 in the Missouri counties of DeKalb and Clinton, mercury thermometers were traded for non-toxic thermometers. Nearly 15 pounds of mercury were collected, including over 900 thermometers and other mercury-containing medical equipment and elemental mercury. In addition, information regarding the hazards of mercury and spill information reached over 45,870 people via radio, newspaper and pamphlet distribution.

The State of Missouri currently has a contract with HTR-Group for fluorescent bulb recycling services for state facilities. HTR-Group, located in Lake Ozark, is the only fluorescent lamp recycler in Missouri.

Partners: Missouri Department of Natural Resources, Solid Waste Management Districts, county health officials, state and local governments, pharmacies, medical facilities, school organizations and media.

Potential Implementation Tasks: Similar trade-in events could be expanded to include more products and cover the entire state of Missouri, using Solid Waste Management District Grants or other support. Events like this reduce potential mercury exposures and releases immediately by the collection itself, and the dissemination of information regarding the potential hazards of mercury may help avoid future mercury releases.

Grants could be used to encourage recycling facilities to develop collection programs for common mercury-containing products. For example, a person would be more likely to recycle their fluorescent lamps or mercury fever thermometer if they could do it at the same time as they recycle their aluminum cans.

Grant moneys could be used to increase or improve storage, increase safety, educate and certify employees to handle the materials and for increased advertising and marketing efforts.

2b. Promote industry-sponsored take-back programs for mercury-containing products.

Current Programs and Activities: In 2003, Missouri had 12 participating wholesalers in The Thermostat Recycling Corporation. The Thermostat Recycling Corporation is a not-for-profit corporation established by Honeywell, White-Rodgers and General Electric to operate a thermostat-recycling program. Wholesalers place recycling containers at a convenient spot at each branch location in the participating state. Dealers collect out-of-service wall-mounted mercury switch thermostats through their normal business operation and drop them off periodically into the collection box. When the collection container is full, The Thermostat Recycling Corporation pays the wholesaler's shipping costs. The program accepts all brands of residential wall-mounted mercury thermostats. For more information, call the Thermostat Recycling Corporation at 1-800-238-8192 or find them on the Web at www.nema.org/gov/ehs/trc/.

Partners: Missouri Department of Natural Resources, Solid Waste Management Districts, homebuilders, dental and medical professionals and their related associations, manufacturers, retailers, contractors, recyclers, state and local governments and citizens of Missouri.

Potential Implementation Tasks: Research available recycling programs similar to the Thermostat Recycling Corporation's program. Make information about these programs available to partners and work to coordinate efforts to begin using these programs if they are not already doing so. If no program exists for a particular product, research the feasibility of establishing one. Provide findings to manufacturers and other potential sponsors.

Materials Banned from Missouri Landfills

Since Jan. 1, 1991, the Missouri Solid Waste Management Law, Section 260.250 RSMo, has prohibited the disposal of certain items from landfill disposal in order to conserve landfill space, promote recycling and reduce the possibility of environmental contamination. These banned items include major appliances, used oil, lead-acid batteries, waste tires and yard waste.

1. Major Appliances

Major appliances, also known as white goods, are defined in the Missouri Solid Waste Management Law as "...clothes washers and dryers, water heaters, trash compactors, dishwashers, conventional ovens, ranges, stoves, woodstoves, air conditioners, refrigerators and freezers."

In September 2002, the Midwest Assistance Program received a grant from the Missouri Department of Natural Resources to identify the barriers to recycling major appliances and make recommendations to enhance recycling and reduce illegal dumping of major appliances. As part of this study (Appendix L), Midwest Assistance Program prepared a questionnaire that was distributed to over 1,700 stakeholders. The questionnaire contained three basic questions regarding which appliances are the most difficult to recycle, the barriers to recycling major appliances, and the solutions to overcoming the barriers. Ten focus groups were also held throughout the state to discuss the problem and recommend solutions for recycling major appliances.

The study concluded that the main barriers to major appliance recycling are economic. Consumers, the solid waste industry and the appliance industry are facing higher recycling costs for major appliances and looking to the state for assistance. It was determined that a decision needed to be made as to how much of the cost should remain with consumers and business, how much could be reduced through good information and education and how much should be subsidized by government programs. The recommendations receiving positive rankings in the prioritization process of the study have been included below as actions.

Objective 1: Reduce illegal dumping and increase recycling of major appliances.

Actions

1a. Provide additional information and education materials regarding major appliance recycling to public and private sectors.

Current Programs and Activities: The department distributes information regarding major appliances on request. For individuals having Internet access, information is available on the department's Web site.

Partners: Missouri Department of Natural Resources, Solid Waste Management Districts, local governments, Missouri Recycling Association and consumers.

Potential Implementation Tasks:

- Improve and increase efforts to share this information.

1b. Encourage solid waste management districts to conduct major appliance collections.

Current Programs and Activities: Major appliance collection events have been sponsored by cities, counties, and solid waste management districts. Solid Waste Management District Grants have funded various projects regarding major appliances. Since 1995, they have funded 39 projects (major appliance collection events and others) that have recovered 14,968 tons of waste.

State Project Grants funded an inter-community major appliance collection event in 2000. They have also been used to purchase tools, balers, conveyors and other equipment for businesses involved in day-to-day collection and recycling of major appliances. Since 1999, project grants have funded 16 projects, resulting in the recovery of 4,625 tons of waste.

Partners: Missouri Department of Natural Resources, Solid Waste Management Districts, local governments, private businesses and citizens.

Potential Implementation Tasks:

- Encourage more solid waste management districts and city and county governments to sponsor collection events. Work on ways to better publicize these efforts.

1c. Provide funding for freon extraction certification and equipment.

Current Programs and Activities: Solid Waste Management District Grants have been used for the purchase of refrigerant recovery equipment and certification and purchase of balers, crushers, trailers and other machinery. They have funded construction of buildings and purchase of collection containers. Grant funds have been used for educational programs and for operational costs for entities involved in ongoing collection and recycling of major appliances.

Partners: Missouri Department of Natural Resources, Environmental Improvement and Energy Resources Authority, Solid Waste Management Districts, private businesses, county and municipal governments.

Potential Implementation Tasks:

- Work with partners to maintain or increase current grant funds available for these types of activities.

1d. Create a fee system to subsidize white goods recycling and illegal disposal cleanup.

Current Programs and Activities: There is currently no fee system to subsidize white goods recycling in Missouri. The department's Solid Waste Management Program and regional offices work to locate illegal dump sites, identify responsible parties, negotiate cleanups and settlements, and pursue legal action where necessary. Complaints and reports of illegal dumps may be made anonymously on the Solid Waste Management Program's Internet Web page.

North Carolina has an advanced disposal fee on major appliances that went into effect on Jan. 1, 1994. Fees of \$10 for major appliances that contain chlorofluorocarbons and \$5 for those that do not were the result of the passage of Senate Bill 60 during the 1993 Legislative Session. The major appliance fee was extended for three years through legislative action in June 1998, but at a lower rate (\$3 per appliance versus the previous two-tiered fee). The major appliance legislation required counties to implement a comprehensive management program for a waste stream that has traditionally been given low priority. As a result of the program all counties now have a written major appliance management plan, and many closely monitor and report tonnages, costs, and income.

Since the advanced disposal fee on major appliances went into effect, illegal dumping has been greatly reduced; however, some illegal dumps remain. The strong impact on dumping has been due to removal of landfill disposal fees and a more convenient infrastructure for collection of major appliances. The program has provided the funds needed to jumpstart county management activities. Counties access the White Goods Management Account by obtaining grants that make it unnecessary for them to accumulate funds during a period of years in order to purchase needed equipment and make capital improvements. Funds in the White Goods Management Program have made it possible for counties to purchase specialized equipment for chlorofluorocarbon recovery and to construct collection and loading areas.

Partners: Missouri Department of Natural Resources, Missouri Attorney General's Office, local law enforcement agencies, private citizens and businesses, Missouri legislature.

Potential Implementation Tasks:

- Increase department's usage of concealed cameras to catch and prosecute illegal dumpers in rural areas.
- Provide instruction for local law enforcement agencies in the use of surveillance cameras at known illegal dumpsites.
- Encourage the legislature to consider an Advanced disposal fee, similar to the North Carolina program.

1e. Encourage better end markets for scrap metal.

Current Programs and Activities: The Missouri Market Development Program provides financial and technical support for recycling market development in Missouri. Information regarding these programs is provided in the recycling market development portion of this plan.

Partners: Missouri Department of Natural Resources, Missouri Market Development Program, Solid Waste Management Districts and metal processors and recyclers.

Potential Implementation Tasks: As discussed in the major appliance study conducted by Midwest Assistance Program, there are no end markets such as mills or foundries for ferrous scrap in Missouri. All scrap is transported to mills in other states or to seaports for shipment abroad. The study proposed that a small steel mill, particularly in the Kansas City area, could lower transportation costs and raise the prices paid for scrap. The study concluded that a market-driven solution was better than a government subsidy program. Tax credits for scrap dealers was offered as a possible solution, but it was noted any tax changes would have to come from the legislature and would be difficult in the present economic climate.

1f. Assist small businesses that want to collect major appliances by streamlining the regulatory process.

Current Programs and Activities: The Midwest Assistance Program's white goods survey identified that many small independent scrap dealers go out of business or operate illegally because they do not understand the regulations governing refrigerant removal, removal of oil and capacitors, and transportation of scrap materials.

The department's Environmental Assistance Office, regional offices and Solid Waste Management Program offer assistance to small businesses in understanding and complying with state and federal regulations.

Partners: Missouri Department of Natural Resources, U.S. Environmental Protection Agency and the Missouri Department of Transportation.

Potential Implementation Tasks: The department should continue to strengthen their knowledge of all regulations concerning major appliance collection and recycling through continued coordination with other agencies involved. Educational workshops and materials could be developed to assist businesses and individuals in understanding regulatory requirements, as well as writing a business plan and preparing grant applications for equipment purchases.

1g. Encourage reuse, repair and recycling of major appliances.

Current Programs and Activities: Some businesses that sell and deliver appliances will remove old appliances at no charge or for a small fee. Many have arrangements with individuals or scrap yards that pick up old appliances from their establishment. There are also individuals and businesses that pick up old appliances free of charge and then refurbish and sell them as used. These businesses sometimes run ads in local newspapers and telephone Yellow Pages.

The department's Solid Waste Management Program, regional offices and Outreach and Assistance Office offer assistance to businesses and individuals in locating recycling facilities in their area.

Appliance Recycling Centers of America has partnered with Whirlpool Corporation to recycle used appliances that are scrapped when Whirlpool sells replacement units to apartment complexes, under an early-retirement incentive sponsored by two electric utilities in California. This effort intends to replace older refrigerators with more energy-efficient models.

Columbia River PUD, a publicly owned utility in Oregon, offers citizens who purchase a new energy-efficient appliance a rebate of \$25-\$75, and pay even more if the customer turns in an old appliance when they purchase the new one. Those who wish to recycle an appliance but are not purchasing a new one may receive a rebate of up to \$15 off their electric bill.

Partners: Missouri Department of Natural Resources, U.S. Environmental Protection Agency, local governments, retailers, manufacturing industry, scrap and salvage operations, electric utilities, Missouri Recycling Association and Solid Waste Management Districts.

Potential Implementation Tasks:

Work with partners to bring retailers and salvage operators together to set up cooperative arrangements beneficial to both parties.

Encourage electric utilities, appliance recyclers and manufacturers to create incentive programs similar to the Columbia River PUD.

2. Lead-Acid Batteries

The Missouri Solid Waste Management Regulations, 10 CSR 80-2.010(52) define lead acid battery as "...a battery designed to contain lead and sulfuric acid with a nominal voltage of at least six (6) volts and of the type intended for use in motor vehicles and watercraft." Retailers are required by law to accept a used lead acid battery in exchange for a newly purchased battery. Lead acid batteries, those used in cars, boats, and other vehicles, contain sulfuric acid that reacts with lead and lead oxide to generate electricity. Some retailers will accept old batteries even without the purchase of a new battery.

Objective 1: Continue collection and recycling of lead-acid batteries.

Action

1a. Work with retailers and solid waste management districts to continue collection of lead-acid batteries.

Current Programs and Activities: Retailers of automotive batteries are required by law to accept one used battery for each new battery purchased. Solid waste management districts sponsor regional household hazardous waste collection events, at which lead acid batteries may be accepted.

Partners: Missouri Department of Natural Resources, Solid Waste Management Districts, local governments, retailers and private citizens.

Potential Implementation Tasks: Work with partners to increase the number of facilities accepting used batteries without requiring the purchase of a new battery. Work with solid waste management districts to increase the number of household hazardous waste collection events. The department could prepare new technical bulletins providing information on general battery waste management and lead acid battery recycling.

3. Used Oil

Used oil, as defined in 10 CSR 80-2.010(110), means "...any motor oil which as a result of use, becomes unsuitable for its original purpose due to loss of original properties or the presence of impurities, but...shall not include ethylene glycol used for solvent purposes, oil fibers that have been drained of free-flowing used oil, oily waste, oil recovered from oil tank cleaning operations, oil spilled to land or water, or industrial nonlube oil such as hydraulic oils, transmission oils, quenching oils, and transformer oils." The improper disposal of used oil causes unnecessary contamination to ground and surface water. Householders who change their own oil, known as do-it-yourselfers, and farmers who generate less than 25 gallons per month from farm vehicles or machinery in a calendar year are exempt from the regulations governing used oil (10 CSR 25-11.279).

In January 2000, the department's Technical Assistance Program (now part of the Outreach and Assistance Center) prepared a report on household hazardous waste management entitled, *A Missouri Plan for Safe Management and Collection of Household Hazardous Waste, Family Farm Waste, and Conditionally Exempt Small Quantity Generator Waste and Do-It-Yourselfer Used Oil*. This report provided information on all aspects of used oil management as well as do-it-yourselfer used oil collection.

Objective 1: Encourage continued proper management and recycling of used oil and increase voluntary participation of businesses and local governments in do-it-yourself used oil collection programs.

Actions

- 1a. Educate public, private and business sectors about proper management techniques and recycling opportunities for used oil through written and media avenues.**

Current Programs and Activities: Citizens can call the Environmental Assistance Office at 1-800-361-4827 or their solid waste management district planner for used oil recycling locations in their community.

Partners: Missouri Department of Natural Resources and Solid Waste Management Districts.

Potential Implementation Tasks:

- Missouri Department of Natural Resources could develop television and radio ads providing information on recycling of used oil, as well as other items.

- 1b. Encourage more district household hazardous waste collection programs to include used oil in their collections.**

Current Programs and Activities: Solid waste management districts periodically sponsor household hazardous waste collection events, at which used oil is accepted.

Partners: Missouri Department of Natural Resources, Solid Waste Management Districts and local governments.

Potential Implementation Tasks:

- Encourage establishment of more permanent household hazardous waste collection facilities in more areas of the state.

- 1c. Target grants to develop used oil recycling and collection enterprises.**

Current Programs and Activities: Both Solid Waste Management District Grants and State Project Grants have been awarded to fund household hazardous waste collection events.

A model for used oil management is the program established in 1984 by the Florida Department of Environmental Protection. Florida's Used Oil Recycling Program has grown to become one of the most successful in the United States and has received national recognition. The program consists of a registration and record keeping program for used oil handlers, a permitting program for used oil processors and technical assistance to the public and regulated community. The 1988 Florida Legislature approved a one-time appropriation of funds amounting to \$1 million for local government grants for establishing public used oil collection centers and \$1.5

million for statewide incentive and awareness and educational programs aimed at Do-It-Yourself oil changers and school students.

Partners: Missouri Department of Natural Resources, Solid Waste Management Districts, local governments, private businesses and private citizens.

Potential Implementation Tasks:

- Work with partners to develop a program similar to the Florida model.

Objective 2: Provide technical assistance and information regarding used oil collection locations in the state.

Action

2a. Compile and maintain a database of all used oil collection services in the state.

Current Programs and Activities: The department's Solid Waste Management Program maintains a listing of used oil collection service providers based on information provided by the solid waste management districts. The department's Outreach and Assistance Center and solid waste management districts receive notifications of do-it-yourself used oil collection centers and maintain a listing of this information.

Partners: Missouri Department of Natural Resources, Solid Waste Management Districts, local governments and private businesses.

Potential Implementation Tasks:

- Promote the information sources available from the department and the solid waste management districts.

4. Whole Tires

Waste tires began stacking up nationwide after World War II as automobile traffic increased. By 1990, the illegal disposal of waste tires in Missouri had become so widespread that the General Assembly passed the state's first waste tire law, Senate Bill 530. To date, over 12 million tires have been cleaned up from 449 tire dumps. Approximately 1.5 million remain to be cleaned up from known waste tire dumps. There may be as many as 1 million additional tires in dumps that are not known to the department.

When waste tires are not disposed or recycled properly, they pose serious threats to human health and the environment. Tires that are improperly stored for extended periods of time frequently catch fire as a result of accidents, vandalism and arson. Fires from waste tires release hazardous substances into the air and possibly into groundwater sources and can burn for months or even years. Waste tires in the environment provide a perfect breeding ground for mosquitoes. Cleaning up waste tires and other trash that can contain even small

amounts of water is a very effective way to reduce mosquito breeding sites and thus reduce the spread of mosquito-borne illnesses such as West Nile virus.

The department has been working with the Waste Tire Advisory Council to discuss the need for an extension of the tire fee and the future direction and focus of the department's waste tire management efforts. The council is comprised of tire industry members, state legislators, department staff and representatives from other state agencies. Their recommendations are included in this report as actions. (Appendix M)

Objective 1: Provide incentives that encourage the safe and environmentally sound management of waste tires, minimizing disposal and maximizing recycling of waste tires into Tire-Derived-Fuel (TDF) and beneficial end use products such as playground cover material. This objective addresses the five percent of waste tires currently not accounted for in the current infrastructure of the waste tire industry.

Actions

1a. Require permits for waste tire sites, processors and haulers.

Current Programs and Activities: The Solid Waste Management Program is responsible for permitting waste tire sites and processors. On March 19, 2001, Governor Holden signed Executive Order 02-03 designating the Missouri Department of Transportation to run the commercial-carrier industry's One-Stop Shop for all its licensing and permit needs. As a result of the executive order, the Solid Waste Management Program reviews waste tire hauler applications for environmental compliance and provides comments to the Missouri Department of Transportation. Permit issuance is now the Department of Transportation's Motor Carrier Safety Unit's responsibility. There are currently 76 permitted waste tire haulers working in Missouri. The regional offices' waste tire staff provide concurrence on the permits for the sites, processors and haulers.

Partners: Missouri Department of Natural Resources and the Missouri Department of Transportation.

Potential Implementation Tasks: No new program is needed if the waste tire fee is reauthorized. Streamlining of the permitting process can be explored.

1b. Enhance established controls for permitting, enforcement and inspections.

Current Programs and Activities: The Solid Waste Management Program and the department's Regional Offices are responsible for implementing the permitting process. Regional Office waste tire staff, who provide concurrence or nonconcurrence to the Solid Waste Management Program, review permits for the waste tire sites and processors. The sites and processors are then notified of the approval or denial of the permit.

The Regional Offices' waste tire staff also reviews the Waste Tire Hauler Permits. The Solid Waste Management Program faxes the Notice of Concurrence or

Nonconcurrence to the Missouri Department of Transportation who approves or denies the permit accordingly.

Inspections and enforcement are considered by industry to be the most important aspect of the existing controls.

Partners: Missouri Department of Natural Resources and the Missouri Department of Transportation.

Potential Implementation Tasks:

- Increased enforcement and inspections of prospective sites, processors and haulers will enhance the permitting, enforcement and inspection controls.

1c. Ensure that tire collection centers such as tire retailers, service stations and salvage yards are properly managed to prevent vermin and fire hazards by recycling or disposing of tires.

Current Programs and Activities: The Solid Waste Management Program and the Regional Offices' waste tire staff are responsible for the inspection and oversight of tire collection centers to ensure the proper management and recycling of waste tires.

Partners: Missouri Department of Natural Resources and the waste tire industry.

Potential Implementation Tasks:

- Continue efforts to reauthorize the fee and develop flexibility in the funding of the program.
- The increased flexibility in funding may allow inspectors to provide additional enforcement through increased inspections of the tire collection centers.
- Currently, the program is able to inspect about 20 percent of the existing retailers annually.

1d. Address the five percent of waste tires that are not accounted for through the existing infrastructure by enhancing the tracking system.

Current Programs and Activities: The Solid Waste Management Program, the regional offices' waste tire staff and the tire industry are responsible for addressing the waste tires that are not accounted for through the existing infrastructure by enhancing the tracking system.

Partners: Missouri Department of Natural Resources and the tire industry.

Potential Implementation Tasks:

- The Waste Tire Tracking System database will be developed to allow for the auto-population of data specific to the tire retailers, permitted waste tire haulers, and permitted waste tire processing facilities that accept the waste tires.
- The database should be made available to the regional offices' waste tire staff.

- The Waste Tire Tracking system will be enhanced due to the data being entered by the regional office staff who conduct the inspections of the tire retailers, haulers and processing facilities. Enhancements are more timely data entry and more accessible data at regional office level for inspection planning to reach goals.
- Making the Waste Tire Tracking System available to the regional offices will help with accounting for five percent of waste tires currently unaccounted for in the infrastructure.
- The increased flexibility in funding may also allow for inspectors to provide additional enforcement through increased inspections of the tire collection centers.

1e. Increase collection center inspections.

Current Programs and Activities: The expiration of the waste tire fee has caused the stoppage of inspections by regional offices' waste tire staff. If the waste tire fee is re-authorized, there will still be a need for changes in the fund distribution to allow for the increase in center inspections.

Partners: Missouri Department of Natural Resources and the tire industry.

Potential Implementation Tasks: The increased flexibility in funding may allow more inspectors to provide additional enforcement through increased inspections of the tire collection centers.

Objective 2: Provide technical assistance to citizens, local governments, non-profit organizations, institutions, business and the waste tire industry in order to assist them in reducing waste tires at the source, using alternatives to disposal and using sound practices for properly managing waste tires. The technical assistance will provide them with options for the cleanup, proper disposal and recycling of waste tires to prevent illegal waste tire dumps, infectious diseases and tire fires.

Actions

2a. Conduct inspections and enforcement actions against violators of the waste tire law.

Current Programs and Activities: The Solid Waste Management Program, the Outreach and Assistance Center, solid waste management districts and the Regional Offices' waste tire staff are responsible for the prevention and enforcement of illegal waste tire dumps.

Partners: Missouri Department of Natural Resources, Missouri Department of Health and Senior Services, tire industry, Solid Waste Management Districts and local governments.

Potential Implementation Tasks:

- Continue education efforts of the Outreach and Assistance Center, the Solid Waste Management Program, Regional Offices' waste tire staff and local governmental entities to increase awareness of the dangerous facets of waste tires with respect to infectious diseases transmitted through mosquitoes and other vermin as well as waste tire fires.
- Continue to reimburse non-profit organizations for the proper disposal of waste tires collected at cleanup events.

2b. Assist local governments with waste tire control efforts and illegal dump cleanups.

Current Programs and Activities: The Solid Waste Management Program works closely with local governments to prevent and clean up illegal waste tire dumps. Governmental entities are only eligible for innocent party waste tire cleanups if they can prove ownership of the property in question. However, local governments can work with non-profit organizations to conduct citywide and countywide waste tire cleanup events. The solid waste management districts work with local governments on waste tire control efforts.

Partners: Missouri Department of Natural Resources, Solid Waste Management Districts and the tire industry.

Potential Implementation Tasks:

- Continue to work closely with local governments and non-profit organizations to coordinate and plan waste tire cleanup events and disseminate information on proper waste tire disposal.
- Continue to reimburse non-profit organizations for the proper disposal of waste tires collected at cleanup events.
- Work closely with solid waste management districts to ensure that their amnesty day enhances the current infrastructure for managing waste tires.

2c. Provide technical assistance to the public, legislators and other officials, tire retailers and recyclers.

Current Programs and Activities: The Solid Waste Management Program and the Regional Offices' waste tire staff respond to questions from the waste tire industry, the public, legislators and other officials. The program developed several technical bulletins and fact sheets about waste tire issues. The program also has assisted with the development and composition of a Web site that provides extensive information for the public and the waste tire industry.

Partners: Missouri Department of Natural Resources.

Potential Implementation Tasks:

- Continue to develop informational materials as new technologies and issues emerge.

- Revise reports for the legislators to provide information on the progress and needs of the program.
- Provide these reports and other information on the Web site as appropriate.

2d. Disseminate the *Management of Waste Tire - Technical Bulletin* on how to prevent tires from becoming mosquito breeding grounds.

Current Programs and Activities: The department provides paper copies and online access to the technical bulletins for the purpose of disseminating pertinent information. The Department of Health and Senior Services uses their Web site and weekly newsletters to disseminate information on the hazards of waste tires to local public health agencies.

Partners: Missouri Department of Natural Resources and the Missouri Department of Health and Senior Services.

Potential Implementation Tasks:

- Regional Offices' waste tire staff continue to distribute the *Management of Waste Tires -Technical Bulletin* to violators of solid waste management law.
- The technical bulletins may also be accessed on the department's Web site:
 - *Management of Waste Tires – Technical Bulletin*
<http://www.dnr.state.mo.us/oac/pub2056.pdf>
 - Department of Health and Senior Services Web site:
<http://www.dhss.state.mo.us/WestNileVirus/>
 - Solid Waste Management Program Web site:
<http://www.dnr.state.mo.us/alpd/swmp/tires/tirelist.htm>

2e. Provide information on tire fire prevention through the *Response to Tire Fires –Technical Bulletin*.

Current Programs and Activities: The department provides paper copies and online access to this and other technical bulletins for the purpose of disseminating pertinent information.

Partners: Missouri Department of Natural Resources.

Potential Implementation Tasks:

- The technical bulletins may also be accessed on the department's Web site:
 - *Response to Tire Fires – Technical Bulletin*
<http://www.dnr.state.mo.us/oac/pub2062.pdf>

2f. Provide monetary assistance for the cleanup of innocent party tire dumps statewide to prevent mosquito-borne illnesses and the proliferation of vermin.

Current Programs and Activities: The Solid Waste Management Program works with the Regional Offices' waste tire staff to make determinations of innocent party status. Once the investigation is complete and the innocent party status is

concurred upon between the program and the Regional Offices' waste tire staff, the waste tire dump is scheduled for cleanup.

Partners: Missouri Department of Natural Resources.

Potential Implementation Tasks:

- Promote 100 percent state-funded waste tire cleanups at innocent party sites located on private property.
- This promotion could coincide with new Less than 20,000 Strategy project promotions.

2g. Offer incentives to property owners who self-report their tire dumps to sign innovative settlement agreements.

Current Programs and Activities: The Solid Waste Management Program, the Regional Offices' waste tire staff and the Attorney Generals' Office work with property owners who self-report their waste tire dumps to the program to come to an agreement. This special initiative project was called the Less than 20,000 Strategy. The project protects the environment, cleans up the site and allows for some cost recovery for the state to clean up the site.

The Less than 20,000 Strategy project was initiated on Nov. 2, 2002, and ran through April 30, 2003. The project revealed 100 unknown waste tire dumps with approximately 480,000 waste tires.

Partners: Missouri Department of Natural Resources, Missouri Attorney General's Office, private landowners and contractors.

Potential Implementation Tasks:

- Renew this initiative and consider new projects of a similar nature.

2h. Reimburse non-profit groups for their waste tire cleanups to encourage citizen participation in the maintenance of our environment and to educate the public.

Current Programs and Activities: The Solid Waste Management Program currently reimburses non-profit groups for the proper disposal of waste tires. There are no other incentives for the non-profit group to conduct the waste tire cleanup event other than the fact that their work helps cleanup the environment.

Partners: Missouri Department of Natural Resources, non-profit organizations, local governments and contractors.

Potential Implementation Tasks:

- Continue to provide a monetary incentive for incidental costs for nonprofit organizations to clean up and remove waste tires. The funds will help pay for the cost of protective clothing such as gloves for the volunteers as well as other incidental cost that may be associated with the cleanup of waste tires.

Objective 3: Develop the waste tire market to the point where waste tires have value. In doing so, the waste tires currently in dumps will be removed from the dumps by the landowners themselves, and taken to the waste tire recyclers to be used as a raw material in the manufacture of tire-derived fuel and new products.

Actions

3a. Provide grants for schools, parks and other non-profit entities to purchase playground cover made from tires to protect children from injuries from falls.

Current Programs and Activities: The Solid Waste Management Program administers the waste tire material playground cover grant projects. The recipient of each grant is responsible for purchasing and installing the waste tire material on the playground. After the material is installed and paid for, the Regional Offices' waste tire staff inspect the site. The recipient is then reimbursed for the cost of the material and the delivery costs.

Partners: Missouri Department of Natural Resources, public school districts, local governments and non-profit organizations.

Potential Implementation Tasks:

- Promote the waste tire material grants in urban and rural areas of the state where the grants are not being utilized.
- Target mailings, calls, media promotions and solid waste management districts in rural and urban areas of the state where grants have not been utilized.

3b. Promote the use of rubberized asphalt and the use of crumb rubber in the manufacture of new products.

Current Programs and Activities: The Solid Waste Management Program has attempted to communicate with the Missouri Department of Transportation by submitting information on the usage of rubberized asphalt in roads throughout the country. The Missouri Department of Transportation has stated that they believe the material is not cost effective.

Partners: Missouri Department of Natural Resources, Missouri Department of Transportation, waste tire industry, asphalt industry and the Missouri Market Development Program.

Potential Implementation Tasks:

- Subsidize rubberized asphalt projects with the Missouri Department of Transportation and the Missouri Market Development Program.
- Promote civil engineering projects using waste tire material in highway construction such as lightweight fill and drainage.
- Increase the number of waste tire material playground grant projects.
- Support the use of waste tires in other civil engineering applications.

- Promote landfill projects using waste tire material as a liner protection layer, in leachate and methane gas collection system, and as a drainage layer under final cover.

3c. Encourage power plants to use tire-derived fuel, lowering their emissions and using more tires.

Current Programs and Activities: The Solid Waste Management Program collects data on the tire-derived fuel usage in the state through end user registration.

Partners: Missouri Department of Natural Resources, power plants and cement kilns.

Potential Implementation Tasks:

- Regulatory requirements for the use of tire-derived fuel will be evaluated to determine if changes to regulations are needed to encourage the use of tire-derived fuel.

3d. Augment market development via Waste Tire Grant Program.

Current Programs and Activities: The current statute limits funding for grants to five percent of the revenues collected, currently \$85,000 to \$100,000 per year. This limitation virtually eliminates meaningful market development. As a result, waste tire material grants for playground cover under equipment are the only market development tools in use.

Partners: Missouri Department of Natural Resources, public school districts, local governments and non-profit organizations.

Potential Implementation Tasks:

- Require all state parks to use the waste tire material in the form of shredded waste tires at a minimum and encourage mats and pour in place material where appropriate.
- The Waste Tire Advisory Council recommends that future legislation provide the department more flexibility with the funding. This flexibility could be accomplished by changing the allocation percentages stated in the existing statute.

3e. Coordinate with other state agencies and industry to introduce more waste tire-derived materials in their projects and the use of waste tires in civil engineering applications.

Current Programs and Activities: The department's Outreach and Assistance Center is currently responsible for coordination with other state agencies for the development of more waste tire-derived materials.

Partners: Missouri Department of Natural Resources, other state agencies and the Environmental Improvement and Energy Resources Authority.

Potential Implementation Tasks:

- Use the grant program to stimulate the market development for waste tire materials.
- Encourage the use of waste tire material in landfill civil engineering and rubberized asphalt projects in the state.

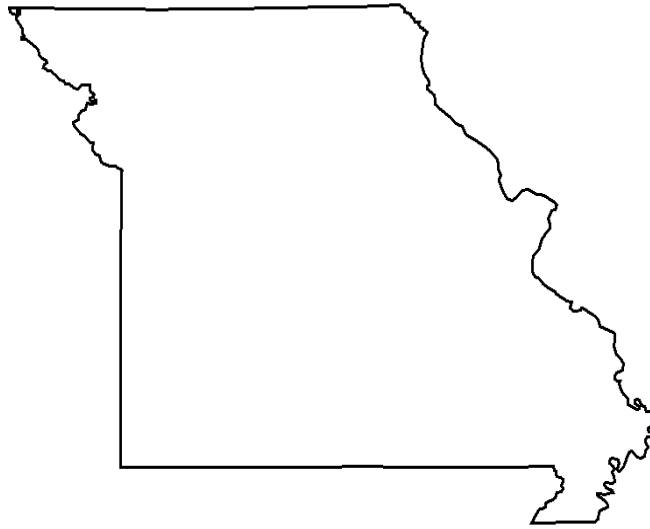
Yard Waste

Yard waste is made up of leaves, grass clippings, yard and garden vegetation and Christmas trees. Until 1992, much of this yard waste went into Missouri's landfills. Since the yard waste ban became effective, more than 300 communities in the state have yard waste collection services. Yard waste can be easily composted to produce beneficial products such as soil amendments or mulch. Yard waste composting is a sensible solid waste management alternative for Missouri municipalities. The department's Solid Waste Management Program and the Outreach and Assistance Center provide technical assistance regarding composting activities. Regulatory aspects of yard waste composting are handled by the Solid Waste Management Program in coordination with the department's Water Protection and Soil Conservation Division.

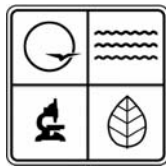
Actions for managing yard waste are found in the Organics in Solid Waste segment of the Managing Waste as a Resource section.

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MISSOURI SOLID WASTE MANAGEMENT PLAN



Missouri Department of Natural Resources



November, 2005

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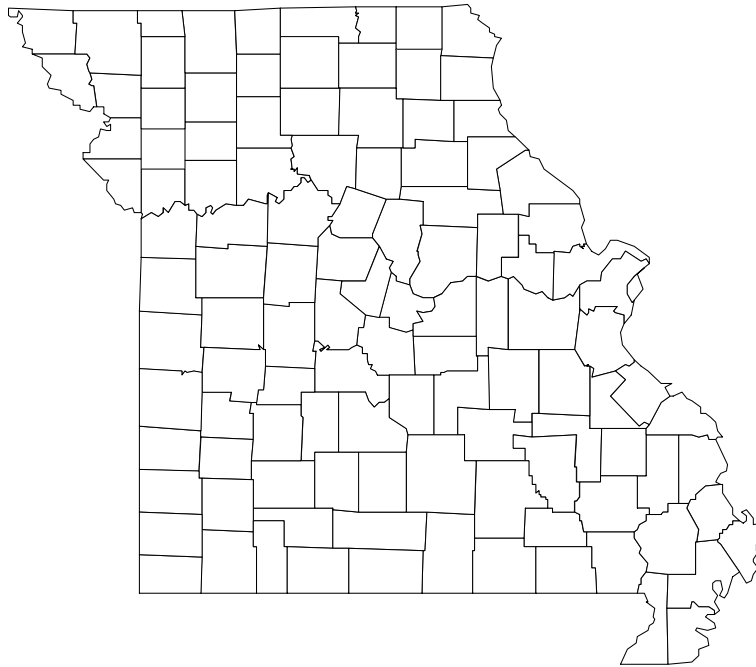
APPENDIX A

MISSOURI SOLID WASTE MANAGEMENT LAW

Note: This version of the Missouri Solid Waste Law was in effect
December 2004.

For a current version please view Sections 260.200-260.345 on the web
page provided by the Missouri General Assembly at
<http://www.moga.mo.gov/statutes/chapters/chap260.htm>.

Missouri Solid Waste Management Law



Effective August 28, 2004

This copy of the law has been developed for use by the Missouri Department of Natural Resources. It is based upon the *Revised Statutes of the State of Missouri*, 1986 and supplements. Subscriptions to the *Revised Statutes* and supplements are available through the Committee on Legislative Research, Revisor of the Statutes, Room 117-A Capitol Building, Jefferson City, Missouri, 65101. For a copy of Missouri's Solid Waste Management Law, please contact the Legislative Library, Capital Building, Third Floor, Jefferson City, Missouri, 65101, (573) 751-4633. This reprinted material may not be used as evidence in a court of law. Copies for this purpose must be obtained from the official state records which are available through the office of the Revisor of the Statutes.

CHAPTER 260

Missouri Solid Waste Management Law

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Missouri Revised Statutes

Chapter 260

Environmental Control

August 28, 2004

All licenses, permits or grants of authority by department must be in compliance with local area's zoning, building, health codes or ordinances, procedure to determine compliance.

260.003. Notwithstanding any provision of this chapter, the department of natural resources shall require that before any permit, license, or grant of authority is issued or renewed by the department of natural resources pursuant to this chapter, the local jurisdiction shall verify that the person and activity which is the subject of such permit, license, or grant of authority, is in compliance with all applicable local zoning, building, and health codes, ordinances, and orders with regard to the person and activity regulated pursuant to this chapter. Failure of the local jurisdiction to respond to a request from the department of natural resources for such verification within thirty days of such request shall be deemed to be verification of local compliance.

(L. 1995 S.B. 60 & 112 § 1)

(1998) Amendment in SB 60 (1995) was unconstitutional to the extent that it applied to hazardous waste management because title of bill was underinclusive. *National Solid Waste Management Association v. Director of the Department of Natural Resources*, 964 S.W.2d 818 (Mo.banc).

Definitions.

260.200. The following words and phrases when used in sections 260.200 to 260.345 shall mean:

(1) "Alkaline-manganese battery" or "alkaline battery", a battery having a manganese dioxide positive electrode, a zinc negative electrode, an alkaline electrolyte, including alkaline-manganese button cell batteries intended for use in watches, calculators, and other electronic products, and larger-sized alkaline-manganese batteries in general household use;

(2) "Button cell battery" or "button cell", any small alkaline-manganese or mercuric-oxide battery having the size and shape of a button;

(3) "City", any incorporated city, town, or village;

(4) "Clean fill", uncontaminated soil, rock, sand, gravel, concrete, asphaltic concrete, cinderblocks, brick, minimal amounts of wood and metal, and inert solids as approved by rule or policy of the department for fill, reclamation or other beneficial use;

(5) "Closure", the permanent cessation of active disposal operations, abandonment of the disposal area, revocation of the permit or filling with waste of all areas and volumes specified in the permit and preparing the area for long-term care;

(6) "Closure plan", plans, designs and relevant data which specify the methods and schedule by which the operator will complete or cease disposal operations, prepare the area for long-term care, and make the area suitable for other uses, to achieve the purposes of sections 260.200 to 260.345 and the regulations promulgated thereunder;

(7) "Conference, conciliation and persuasion", a process of verbal or written communications consisting of meetings, reports, correspondence or telephone conferences between authorized representatives of the department and the alleged violator. The process shall, at a minimum, consist of one offer to meet with the alleged violator tendered by the department. During any such meeting, the department and the alleged violator shall negotiate in good faith to eliminate the alleged violation and shall attempt to agree upon a plan to achieve compliance;

(8) "Demolition landfill", a solid waste disposal area used for the controlled disposal of demolition wastes, construction materials, brush, wood wastes, soil, rock, concrete and inert solids insoluble in water;

(9) "Department", the department of natural resources;

(10) "Director", the director of the department of natural resources;

(11) "District", a solid waste management district established under section 260.305;

(12) "Financial assurance instrument", an instrument or instruments, including, but not limited to, cash or surety bond, letters of credit, corporate guarantee or secured trust fund, submitted by the applicant to ensure proper closure and postclosure care and corrective action of a solid waste disposal area in the event that the operator fails to correctly perform closure and postclosure care and corrective action requirements, except that the financial test for the corporate guarantee shall not exceed one and one-half times the estimated cost of closure and postclosure. The form and content of the financial assurance instrument shall meet or exceed the requirements of the department. The instrument shall be reviewed and approved or disapproved by the attorney general;

(13) "Flood area", any area inundated by the one hundred year flood event, or the flood event with a one percent chance of occurring in any given year;

(14) "Household consumer", an individual who generates used motor oil through the maintenance of the individual's personal motor vehicle, vessel, airplane, or other machinery powered by an internal combustion engine;

(15) "Household consumer used motor oil collection center", any site or facility that accepts or aggregates and stores used motor oil collected only from household consumers or farmers who generate an average of twenty-five gallons per month or less of used motor oil in a calendar year. This section shall not preclude a commercial generator from operating a household consumer used motor oil collection center;

(16) "Household consumer used motor oil collection system", any used motor oil collection center at publicly owned facilities or private locations, any curbside collection of household consumer used motor oil, or any other household consumer used motor oil collection program determined by the department to further the purposes of sections 260.200 to 260.345;

(17) "Infectious waste", waste in quantities and characteristics as determined by the department by rule, including isolation wastes, cultures and stocks of etiologic agents, blood and blood products, pathological wastes, other wastes from surgery and autopsy, contaminated laboratory wastes, sharps, dialysis unit wastes, discarded biologicals known or suspected to be infectious; provided, however, that infectious waste does not mean waste treated to department specifications;

(18) "Lead-acid battery", a battery designed to contain lead and sulfuric acid with a nominal voltage of at least six volts and of the type intended for use in motor vehicles and watercraft;

(19) "Major appliance", clothes washers and dryers, water heaters, trash compactors, dishwashers, conventional ovens, ranges, stoves, woodstoves, air conditioners, refrigerators and freezers;

(20) "Mercuric-oxide battery" or "mercury battery", a battery having a mercuric-oxide positive electrode, a zinc negative electrode, and an alkaline electrolyte, including mercuric-oxide button cell batteries generally intended for use in hearing aids and larger size mercuric-oxide batteries used primarily in medical equipment;

(21) "Minor violation", a violation which possesses a small potential to harm the environment or human health or cause pollution, was not knowingly committed, and is not defined by the United States Environmental Protection Agency as other than minor;

(22) "Motor oil", any oil intended for use in a motor vehicle, as defined in section 301.010, RSMo, train, vessel, airplane, heavy equipment, or other machinery powered by an internal combustion engine;

(23) "Motor vehicle", as defined in section 301.010, RSMo;

(24) "Operator" and "permittee", anyone so designated, and shall include cities, counties, other political subdivisions, authority, state agency or institution, or federal agency or institution;

(25) "Permit modification", any permit issued by the department which alters or modifies the provisions of an existing permit previously issued by the department;

(26) "Person", any individual, partnership, corporation, association, institution, city, county, other political subdivision, authority, state agency or institution, or federal agency or institution;

(27) "Postclosure plan", plans, designs and relevant data which specify the methods and schedule by which the operator shall perform necessary monitoring and care for the area after closure to achieve the purposes of sections 260.200 to 260.345 and the regulations promulgated thereunder;

(28) "Recovered materials", those materials which have been diverted or removed from the solid waste stream for sale, use, reuse or recycling, whether or not they require subsequent separation and processing;

(29) "Recycled content", the proportion of fiber in a newspaper which is derived from postconsumer waste;

(30) "Recycling", the separation and reuse of materials which might otherwise be disposed of as solid waste;

(31) "Resource recovery", a process by which recyclable and recoverable material is removed from the waste stream to the greatest extent possible, as determined by the department and pursuant to department standards, for reuse or remanufacture;

(32) "Resource recovery facility", a facility in which recyclable and recoverable material is removed from the waste stream to the greatest extent possible, as determined by the department and pursuant to department standards, for reuse or remanufacture;

(33) "Sanitary landfill", a solid waste disposal area which accepts commercial and residential solid waste;

(34) "Solid waste", garbage, refuse and other discarded materials including, but not limited to, solid and semisolid waste materials resulting from industrial, commercial, agricultural, governmental and domestic activities, but does not include hazardous waste as defined in sections 260.360 to 260.432, recovered materials, overburden, rock, tailings, matte, slag or other waste material resulting from mining, milling or smelting;

(35) "Solid waste disposal area", any area used for the disposal of solid waste from more than one residential premises, or one or more commercial, industrial, manufacturing, recreational, or governmental operations;

(36) "Solid waste fee", a fee imposed pursuant to sections 260.200 to 260.345 and may be:

(a) A solid waste collection fee imposed at the point of waste collection; or

(b) A solid waste disposal fee imposed at the disposal site;

(37) "Solid waste management area", a solid waste disposal area which also includes one or more of the functions contained in the definitions of recycling, resource recovery facility, waste tire collection center, waste tire processing facility, waste tire site or solid waste processing facility, excluding incineration;

(38) "Solid waste management system", the entire process of managing solid waste in a manner which minimizes the generation and subsequent disposal of solid waste, including waste reduction, source separation, collection, storage, transportation, recycling, resource recovery, volume minimization, processing, market development, and disposal of solid wastes;

(39) "Solid waste processing facility", any facility where solid wastes are salvaged and processed, including:

(a) A transfer station; or

(b) An incinerator which operates with or without energy recovery but excluding waste tire end-user facilities; or

(c) A material recovery facility which operates with or without composting;

(40) "Solid waste technician", an individual who has successfully completed training in the practical aspects of the design, operation and maintenance of a permitted solid waste processing facility or solid waste disposal area in accordance with sections 260.200 to 260.345;

(41) "Tire", a continuous solid or pneumatic rubber covering encircling the wheel of any self-propelled vehicle not operated exclusively upon tracks, or a trailer as defined in chapter 301, RSMo, except farm tractors and farm implements owned and operated by a family farm or family farm corporation as defined in section 350.010, RSMo;

(42) "Used motor oil", any motor oil which, as a result of use, becomes unsuitable for its original purpose due to loss of original properties or the presence of impurities, but used motor oil shall not include ethylene glycol, oils used for solvent purposes, oil filters that have been drained of free flowing used oil, oily waste, oil recovered from oil tank cleaning operations, oil spilled to land or water, or industrial nonlube oils such as hydraulic oils, transmission oils, quenching oils, and transformer oils;

(43) "Utility waste landfill", a solid waste disposal area used for fly ash waste, bottom ash waste, slag waste and flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels;

(44) "Waste tire", a tire that is no longer suitable for its original intended purpose because of wear, damage, or defect;

(45) "Waste tire collection center", a site where waste tires are collected prior to being offered for recycling or processing and where fewer than five hundred tires are kept on site on any given day;

(46) "Waste tire end-user facility", a site where waste tires are used as a fuel or fuel supplement or converted into a useable product. Baled or compressed tires used in structures, or used at recreational facilities, or used for flood or erosion control shall be considered an end use;

(47) "Waste tire generator", a person who sells tires at retail or any other person, firm, corporation, or government entity that generates waste tires;

(48) "Waste tire processing facility", a site where tires are reduced in volume by shredding, cutting, chipping or otherwise altered to facilitate recycling, resource recovery or disposal;

(49) "Waste tire site", a site at which five hundred or more waste tires are accumulated, but not including a site owned or operated by a waste tire end-user that burns waste tires for the generation of energy or converts waste tires to a useful product;

(50) "Yard waste", leaves, grass clippings, yard and garden vegetation and Christmas trees. The term does not include stumps, roots or shrubs with intact root balls.

(L. 1972 S.B. 387 § 1, A.L. 1975 S.B. 98, A.L. 1986 S.B. 475, A.L. 1988 H.B. 1207, A.L. 1990 S.B. 530, A.L. 1993 S.B. 80, et al., A.L. 1995 H.B. 81 merged with S.B. 60 & 112, A.L. 2002 S.B. 984 & 985)

Infectious waste, treatment of--hospitals, department of health and senior services to promulgate rules--transportation of--registration of hospitals--proper disposal, penalty--fee on delivery, exceptions--inspection fee, amount, fund, refund of, when.

260.203. 1. Any infectious waste transferred from the premises of the generator shall be taken to an infectious waste processing facility that holds a valid permit issued by the department, or a hospital as defined in section 197.020, RSMo.

2. No infectious waste shall be placed into a solid waste disposal area except as otherwise provided for in sections 260.200 to 260.245 unless it has been treated or rendered innocuous by a permitted infectious waste processing facility as provided in sections 260.200 to 260.245, or by a hospital as defined in section 197.020, RSMo, by autoclaving, incineration, chemical disinfection, or other methods of treatment approved by the department. The department of health and senior services shall promulgate rules covering the handling and treatment of infectious waste by hospitals as defined in section 197.020, RSMo, and such rules shall be consistent with the rules of the department under sections 260.200 to 260.245, and shall be effective no later than January 1, 1989.

3. All such wastes, when transported off the premises of the generator shall be packaged and transported as provided by rule under sections 260.200 to 260.245, except that hospitals and small quantity generators as defined by the department under this section may transport infectious waste to a hospital for treatment, an infectious waste processing facility for treatment or to a central collection point using their employees and vehicles as long as they meet all other requirements of sections 260.200 to 260.245 and the rules and regulations promulgated under sections 260.200 to 260.245.

4. The department of health and senior services shall provide for a registration process for all hospitals pursuant to the provisions of sections 260.200 to 260.245 and section 192.005, RSMo. The process shall include a completed and signed application on forms provided by the department of health and senior services. The forms shall contain the following:

(1) A statement certifying that the applicant understands and will comply with the applicable requirements of sections 260.200 to 260.245; and

(2) Other requirements established by the department of health and senior services.

5. Registrations shall be renewed annually.

6. Unless otherwise provided for in sections 260.200 to 260.245, any person who treats infectious waste to the specifications of the department of natural resources or the department of health and senior services, and who proposes to dispose of the residue thereof in a sanitary landfill shall properly identify the waste and shall certify to the transporter and the sanitary landfill operator that the waste has been rendered innocuous and may be legally placed in a sanitary landfill pursuant to the provisions of this section. Persons found to be in violation of this subsection shall be guilty of a class A misdemeanor.

7. Facilities permitted to treat infectious waste shall adhere to an operation plan for the handling and treatment of infectious waste approved by the department of natural resources as provided by rule, and hospitals, as defined in section 197.020, RSMo, allowed to treat infectious waste shall adhere to an operation plan for the handling and treatment of infectious waste approved by the department of health and senior services as provided by rule. The plan shall include, but not be limited to, methods of handling and treating the waste, protection of employees and the public and the maximum amount of waste which may be handled per month. Approval for acceptance of infectious waste may be withdrawn for noncompliance with the operation plan. No permitted infectious waste treatment facility shall operate unless it has a solid waste technician trained in the handling of infectious waste on site during any treatment process. Such operator shall meet the requirements established by the department pursuant to section 260.205.

8. Any transporter or generator who delivers infectious waste to an infectious waste processing facility, except small quantity generators and hospitals located in Missouri and defined in section 197.020, RSMo, shall pay a fee of two dollars for each ton of infectious waste so delivered. Such fees shall be collected by the infectious waste processing facility accepting the waste and transmitted to the department. The department shall promptly transmit funds collected under this section to the director of the department of revenue for deposit in the solid waste management fund. Moneys, upon appropriation, shall be used to help pay for the administrative costs associated with infectious waste management. Any transporter or generator who transports infectious waste for more than three hundred miles for management in Missouri shall pay, in addition to the charges above, an additional charge equal to ten percent of the gross charge charged by the processing facility for the management of such waste. Such fees shall be collected by the infectious waste processing facility accepting the waste and transmitted to the department which shall promptly transmit such fees to the department of revenue for deposit in the general revenue fund.

9. Hospitals defined in chapter 197, RSMo, and located in Missouri, may manage infectious waste generated on the premises by autoclaving, incineration, chemical disinfection or other methods of treatment approved by the department of health and senior services. Such

hospitals may also treat infectious waste produced by small quantity generators and other hospitals located in Missouri upon the approval of the department of natural resources and the department of health and senior services. Failure of either department to respond by issuing a certification to accept infectious waste in writing to a hospital which has filed in writing to both departments a notice of intent to treat waste from another hospital within ninety days constitutes approval of the treatment. All hospitals licensed by the state of Missouri pursuant to chapter 197, RSMo, are exempt from all taxes or fees imposed pursuant to sections 260.350 to 260.480, provided that no more than twenty-five percent, by weight, of the infectious waste managed by such hospitals is produced by other generators which are not owned or operated by the hospital.

10. Persons generating one hundred kilograms or less of infectious waste per month are exempt from the provisions of this section except that the department of health and senior services shall specify by rule, in accordance with section 192.005, RSMo, infectious waste that shall be rendered innocuous regardless of quantity. Any person who disposes of waste exempt from the provisions of this act* in a sanitary landfill shall certify to the transporter or the sanitary landfill operator that the waste has been handled in a manner consistent with the law and may be legally placed in a sanitary landfill. Rules promulgated by the department of natural resources and the department of health and senior services pursuant to this subsection shall be effective no later than July 1, 1989. Persons found to be in violation of this subsection shall be guilty of a class A misdemeanor.

11. A generator of infectious waste who operates single or multiple site research facilities for research and experimental activities as defined in section 174 of the 1986 Internal Revenue Code, who generates such waste as a part of research and experimentation activities, and who manages such waste on site, shall not be required to obtain an infectious waste processing facility permit under this section to manage infectious waste. The generator may accept infectious waste from other sites of the parent research company located in Missouri but shall not accept infectious waste from other sources and shall comply with all other requirements and provisions of sections 260.200 to 260.245, and the rules and regulations promulgated thereunder. The University of Missouri Ellis Fischel Cancer Center and the other facilities of the University of Missouri-Columbia shall be considered a multiple site research facility for the purposes of this section.

12. Nothing in this section shall prohibit the transportation of infectious or hazardous waste from the state of Missouri for management in another state.

13. The department of natural resources shall establish, by rule, inspection fees to be paid to the department by owners or operators of commercial infectious waste incinerators. The fees shall not exceed the costs of the inspections and shall not exceed ten thousand dollars per year for a facility. Funds derived from these inspection fees shall be used for the purpose of funding the inspection of commercial infectious waste incinerators.

14. All owners or operators of commercial infectious waste incinerators shall pay the fees, established by the department by rule, for inspections conducted by the department pursuant to this section.

15. There is hereby created the "Infectious Waste Incinerator Inspection Fund". All funds received from infectious waste incinerator inspection fees shall be paid to the director of the department of revenue and deposited in the state treasury to the credit of the infectious waste incinerator inspection fund. Moneys from such fund shall be used by the department of natural resources for conducting inspections at commercial infectious waste incinerators.

16. The department shall furnish to the person, firm or corporation operating the commercial infectious waste facility a complete, full and detailed accounting of the cost of the department's inspection of the facility each time the facility is inspected within thirty days after the inspection is commenced. Failure to do so shall require the department to refund the inspection fee.

(L. 1986 S.B. 475, A.L. 1988 S.B. 535, A.L. 1992 H.B. 1732, A.L. 1993 S.B. 80, et al.)

*"This act" (S.B. 535, 1988) contained numerous sections. Consult Disposition of Sections table for a definitive listing.

Permit for treatment of infectious waste, not to be issued, when.

260.204. No person shall be issued a permit to operate a facility for the treatment of infectious waste who in 1987 received a clean air permit and thereafter operated a facility for the treatment of infectious waste by incineration without applying for and receiving a permit as a solid waste processing facility permitted pursuant to section 260.203 or a hazardous waste facility permitted pursuant to sections 260.350 to 260.430.

(L. 1988 S.B. 535)

Effective 5-5-88

(1990) Statute is a bill of attainder and special legislation where it singled out for legislative punishment those who in a specified year operated an infectious waste incinerator without particular permits but excluded others similarly situated. Statute is unconstitutional and invalid in its entirety. (Mo.banc) Bunker Res. Recycling & Rec. v. Mehan, 782 S.W.2d 381.

(1990) Where statute which prohibits issuance of permit to operate infectious waste treatment facility applies only to those persons or entities who received clean air permit in 1987, statute is a prohibited special law under the Missouri Constitution, since no reasonable basis existed for differential treatment of infectious waste disposers who received clean air permits in that year. Bunker Resource Recycling and Reclamation, Inc. v. Mehan, 782 S.W.2d 381 (Mo.banc.).

Permit required to operate facility, and construction permit to construct facility, requirements, exceptions, fees--plans to be submitted--permits revoked or suspended, when--disclosure statement, required when.

260.205. 1. It shall be unlawful for any person to operate a solid waste processing facility or solid waste disposal area of a solid waste management system without first obtaining an operating permit from the department. It shall be unlawful for any person to construct a solid waste processing facility or solid waste disposal area without first obtaining a construction permit from the department pursuant to this section. A current authorization to operate issued by the department pursuant to sections 260.200 to 260.345 shall be considered to be a permit to operate for purposes of this section for all solid waste disposal areas and processing facilities existing on August 28, 1995. A permit shall not be issued for a sanitary landfill to be located in a flood area, as determined by the department, where flood waters are likely to significantly erode final cover. A permit shall not be required to operate a waste stabilization lagoon, settling pond

or other water treatment facility which has a valid permit from the Missouri clean water commission even though the facility may receive solid or semisolid waste materials.

2. No person or operator may apply for or obtain a permit to construct a solid waste disposal area unless the person has requested the department to conduct a preliminary site investigation and obtained preliminary approval from the department. The department shall, within sixty days of such request, conduct a preliminary investigation and approve or disapprove the site.

3. All proposed solid waste disposal areas for which a preliminary site investigation request pursuant to subsection 2 of this section is received by the department on or after August 28, 1999, shall be subject to a public involvement activity as part of the permit application process. The activity shall consist of the following:

(1) The applicant shall notify the public of the preliminary site investigation approval within thirty days after the receipt of such approval. Such public notification shall be by certified mail to the governing body of the county or city in which the proposed disposal area is to be located and by certified mail to the solid waste management district in which the proposed disposal area is to be located;

(2) Within ninety days after the preliminary site investigation approval, the department shall conduct a public awareness session in the county in which the proposed disposal area is to be located. The department shall provide public notice of such session by both printed and broadcast media at least thirty days prior to such session. Printed notification shall include publication in at least one newspaper having general circulation within the county in which the proposed disposal area is to be located. Broadcast notification shall include public service announcements on radio stations that have broadcast coverage within the county in which the proposed disposal area is to be located. The intent of such public awareness session shall be to provide general information to interested citizens on the design and operation of solid waste disposal areas;

(3) At least sixty days prior to the submission to the department of a report on the results of a detailed site investigation pursuant to subsection 4 of this section, the applicant shall conduct a community involvement session in the county in which the proposed disposal area is to be located. Department staff shall attend any such session. The applicant shall provide public notice of such session by both printed and broadcast media at least thirty days prior to such session. Printed notification shall include publication in at least one newspaper having general circulation within the county in which the proposed disposal area is to be located. Broadcast notification shall include public service announcements on radio stations that have broadcast coverage within the county in which the proposed disposal area is to be located. Such public notices shall include the addresses of the applicant and the department and information on a public comment period. Such public comment period shall begin on the day of the community involvement session and continue for at least thirty days after such session. The applicant shall respond to all persons submitting comments during the public comment period no more than thirty days after the receipt of such comments;

(4) If a proposed solid waste disposal area is to be located in a county or city that has local planning and zoning requirements, the applicant shall not be required to conduct a community involvement session if the following conditions are met:

- (a) The local planning and zoning requirements include a public meeting;
- (b) The applicant notifies the department of intent to utilize such meeting in lieu of the community involvement session at least thirty days prior to such meeting;
- (c) The requirements of such meeting include providing public notice by printed or broadcast media at least thirty days prior to such meeting;
- (d) Such meeting is held at least thirty days prior to the submission to the department of a report on the results of a detailed site investigation pursuant to subsection 4 of this section;
- (e) The applicant submits to the department a record of such meeting;
- (f) A public comment period begins on the day of such meeting and continues for at least fourteen days after such meeting, and the applicant responds to all persons submitting comments during such public comment period no more than fourteen days after the receipt of such comments.

4. No person may apply for or obtain a permit to construct a solid waste disposal area unless the person has submitted to the department a plan for conducting a detailed surface and subsurface geologic and hydrologic investigation and has obtained geologic and hydrologic site approval from the department. The department shall approve or disapprove the plan within thirty days of receipt. The applicant shall conduct the investigation pursuant to the plan and submit the results to the department. The department shall provide approval or disapproval within sixty days of receipt of the investigation results.

5. (1) Every person desiring to construct a solid waste processing facility or solid waste disposal area shall make application for a permit on forms provided for this purpose by the department. Every applicant shall submit evidence of financial responsibility with the application. Any applicant who relies in part upon a parent corporation for this demonstration shall also submit evidence of financial responsibility for that corporation and any other subsidiary thereof.

(2) Every applicant shall provide a financial assurance instrument or instruments to the department prior to the granting of a construction permit for a solid waste disposal area. The financial assurance instrument or instruments shall be irrevocable, meet all requirements established by the department and shall not be canceled, revoked, disbursed, released or allowed to terminate without the approval of the department. After the cessation of active operation of a sanitary landfill, or other solid waste disposal area as designed by the department, neither the guarantor nor the operator shall cancel, revoke or disburse the financial assurance instrument or allow the instrument to terminate until the operator is released from postclosure monitoring and care responsibilities pursuant to section 260.227.

(3) The applicant for a permit to construct a solid waste disposal area shall provide the department with plans, specifications, and such other data as may be necessary to comply with the purpose of sections 260.200 to 260.345. The application shall demonstrate compliance with all applicable local planning and zoning requirements. The department shall make an investigation of the solid waste disposal area and determine whether it complies with the provisions of sections 260.200 to 260.345 and the rules and regulations adopted pursuant to sections 260.200 to 260.345. Within twelve consecutive months of the receipt of an application for a construction permit the

department shall approve or deny the application. The department shall issue rules and regulations establishing time limits for permit modifications and renewal of a permit for a solid waste disposal area. The time limit shall be consistent with this chapter.

(4) The applicant for a permit to construct a solid waste processing facility shall provide the department with plans, specifications and such other data as may be necessary to comply with the purpose of sections 260.200 to 260.345. Within one hundred eighty days of receipt of the application, the department shall determine whether it complies with the provisions of sections 260.200 to 260.345. Within twelve consecutive months of the receipt of an application for a permit to construct an incinerator as defined in section 260.200 or a material recovery facility as defined in section 260.200, and within six months for permit modifications, the department shall approve or deny the application. Permits issued for solid waste facilities shall be for the anticipated life of the facility.

(5) If the department fails to approve or deny an application for a permit or a permit modification within the time limits specified in subdivisions (3) and (4) of this subsection, the applicant may maintain an action in the circuit court of Cole County or that of the county in which the facility is located or is to be sited. The court shall order the department to show cause why it has not acted on the permit and the court may, upon the presentation of evidence satisfactory to the court, order the department to issue or deny such permit or permit modification. Permits for solid waste disposal areas, whether issued by the department or ordered to be issued by a court, shall be for the anticipated life of the facility.

(6) The applicant for a permit to construct a solid waste processing facility shall pay an application fee of one thousand dollars. Upon completion of the department's evaluation of the application, but before receiving a permit, the applicant shall reimburse the department for all reasonable costs incurred by the department up to a maximum of four thousand dollars. The applicant for a permit to construct a solid waste disposal area shall pay an application fee of two thousand dollars. Upon completion of the department's evaluations of the application, but before receiving a permit, the applicant shall reimburse the department for all reasonable costs incurred by the department up to a maximum of eight thousand dollars. Applicants who withdraw their application before the department completes its evaluation shall be required to reimburse the department for costs incurred in the evaluation. The department shall not collect the fees authorized in this subdivision unless it complies with the time limits established in this section.

(7) When the review reveals that the facility or area does conform with the provisions of sections 260.200 to 260.345 and the rules and regulations adopted pursuant to sections 260.200 to 260.345, the department shall approve the application and shall issue a permit for the construction of each solid waste processing facility or solid waste disposal area as set forth in the application and with any permit terms and conditions which the department deems appropriate. In the event that the facility or area fails to meet the rules and regulations adopted pursuant to sections 260.200 to 260.345, the department shall issue a report to the applicant stating the reason for denial of a permit.

6. Plans, designs, and relevant data for the construction of solid waste processing facilities and solid waste disposal areas shall be submitted to the department by a registered

professional engineer licensed by the state of Missouri for approval prior to the construction, alteration or operation of such a facility or area.

7. Any person or operator as defined in section 260.200 who intends to obtain a construction permit in a solid waste management district with an approved solid waste management plan shall request a recommendation in support of the application from the executive board created in section 260.315. The executive board shall consider the impact of the proposal on, and the extent to which the proposal conforms to, the approved district solid waste management plan prepared pursuant to section 260.325. The executive board shall act upon the request for a recommendation within sixty days of receipt and shall submit a resolution to the department specifying its position and its recommendation regarding conformity of the application to the solid waste plan. The board's failure to submit a resolution constitutes recommendation of the application. The department may consider the application, regardless of the board's action thereon and may deny the construction permit if the application fails to meet the requirements of sections 260.200 to 260.345, or if the application is inconsistent with the district's solid waste management plan.

8. If the site proposed for a solid waste disposal area is not owned by the applicant, the owner or owners of the site shall acknowledge that an application pursuant to sections 260.200 to 260.345 is to be submitted by signature or signatures thereon. The department shall provide the owner with copies of all communication with the operator, including inspection reports and orders issued pursuant to section 260.230.

9. The department shall not issue a permit for the operation of a solid waste disposal area designed to serve a city with a population of greater than four hundred thousand located in more than one county, if the site is located within one-half mile of an adjoining municipality, without the approval of the governing body of such municipality. The governing body shall conduct a public hearing within fifteen days of notice, shall publicize the hearing in at least one newspaper having general circulation in the municipality, and shall vote to approve or disapprove the land disposal facility within thirty days after the close of the hearing.

10. Upon receipt of an application for a permit to construct a solid waste processing facility or disposal area, the department shall notify the public of such receipt:

(1) By legal notice published in a newspaper of general circulation in the area of the proposed disposal area or processing facility;

(2) By certified mail to the governing body of the county or city in which the proposed disposal area or processing facility is to be located; and

(3) By mail to the last known address of all record owners of contiguous real property or real property located within one thousand feet of the proposed disposal area and, for a proposed processing facility, notice as provided in section 64.875, RSMo, or section 89.060, RSMo, whichever is applicable.

(4) If an application for a construction permit meets all statutory and regulatory requirements for issuance, a public hearing on the draft permit shall be held by the department in the county in which the proposed solid waste disposal area is to be located prior to the issuance of the permit. The department shall provide public notice of such hearing by both printed and broadcast media at least thirty days prior to such hearing. Printed notification shall include publication in at least one newspaper having general circulation within the county in which the proposed disposal area is to be located. Broadcast notification shall include public service announcements on radio stations that

have broadcast coverage within the county in which the proposed disposal area is to be located.

11. After the issuance of a construction permit for a solid waste disposal area, but prior to the beginning of disposal operations, the owner and the department shall execute an easement to allow the department, its agents or its contractors to enter the premises to complete work specified in the closure plan, or to monitor or maintain the site or to take remedial action during the postclosure period. After issuance of a construction permit for a solid waste disposal area, but prior to the beginning of disposal operations, the owner shall submit evidence that he or she has recorded, in the office of the recorder of deeds in the county where the disposal area is located, a notice and covenant running with the land that the property has been permitted as a solid waste disposal area and prohibits use of the land in any manner which interferes with the closure and, where appropriate, postclosure plans filed with the department.

12. Every person desiring to obtain a permit to operate a solid waste disposal area or processing facility shall submit applicable information and apply for an operating permit from the department. The department shall review the information and determine, within sixty days of receipt, whether it complies with the provisions of sections 260.200 to 260.345 and the rules and regulations adopted pursuant to sections 260.200 to 260.345. When the review reveals that the facility or area does conform with the provisions of sections 260.200 to 260.345 and the rules and regulations adopted pursuant to sections 260.200 to 260.345, the department shall issue a permit for the operation of each solid waste processing facility or solid waste disposal area and with any permit terms and conditions which the department deems appropriate. In the event that the facility or area fails to meet the rules and regulations adopted pursuant to sections 260.200 to 260.345, the department shall issue a report to the applicant stating the reason for denial of a permit.

13. Each solid waste disposal area, except utility waste landfills unless otherwise and to the extent required by the department, and those solid waste processing facilities designated by rule, shall be operated under the direction of a certified solid waste technician in accordance with sections 260.200 to 260.345 and the rules and regulations promulgated pursuant to sections 260.200 to 260.345.

14. Base data for the quality and quantity of groundwater in the solid waste disposal area shall be collected and submitted to the department prior to the operation of a new or expansion of an existing solid waste disposal area. Base data shall include a chemical analysis of groundwater drawn from the proposed solid waste disposal area.

15. Leachate collection and removal systems shall be incorporated into new or expanded sanitary landfills which are permitted after August 13, 1986. The department shall assess the need for a leachate collection system for all types of solid waste disposal areas, other than sanitary landfills, and the need for monitoring wells when it evaluates the application for all new or expanded solid waste disposal areas. The department may require an operator of a solid waste disposal area to install a leachate collection system before the beginning of disposal operations, at any time during disposal operations for unfilled portions of the area, or for any portion of the disposal area as a part of a remedial plan. The department may require the operator to install monitoring wells before the beginning of disposal operations or at any time during the operational life or postclosure care period if it concludes that conditions at the area warrant such monitoring. The operator of a demolition landfill or utility waste landfill shall not be required to install a leachate collection and removal system or monitoring wells unless otherwise and to the

extent the department so requires based on hazardous waste characteristic criteria or site specific geohydrological characteristics or conditions.

16. Permits granted by the department, as provided in sections 260.200 to 260.345, shall be subject to suspension for a designated period of time, civil penalty or revocation whenever the department determines that the solid waste processing facility or solid waste disposal area is, or has been, operated in violation of sections 260.200 to 260.345 or the rules or regulations adopted pursuant to sections 260.200 to 260.345, or has been operated in violation of any permit terms and conditions, or is creating a public nuisance, health hazard, or environmental pollution. In the event a permit is suspended or revoked, the person named in the permit shall be fully informed as to the reasons for such action.

17. Each permit for operation of a facility or area shall be issued only to the person named in the application. Permits are transferable as a modification to the permit. An application to transfer ownership shall identify the proposed permittee. A disclosure statement for the proposed permittee listing violations contained in subsection 19 of this section shall be submitted to the department. The operation and design plans for the facility or area shall be updated to provide compliance with the currently applicable law and rules. A financial assurance instrument in such an amount and form as prescribed by the department shall be provided for solid waste disposal areas by the proposed permittee prior to transfer of the permit. The financial assurance instrument of the original permittee shall not be released until the new permittee's financial assurance instrument has been approved by the department and the transfer of ownership is complete.

18. Those solid waste disposal areas permitted on January 1, 1996, shall, upon submission of a request for permit modification, be granted a solid waste management area operating permit if the request meets reasonable requirements set out by the department.

19. In case a permit required pursuant to this section is denied or revoked, the person may request a hearing in accordance with section 260.235.

20. Any person seeking a permit or renewal of a permit to operate a commercial solid waste processing facility, or a solid waste disposal area shall, concurrently with the filing of application for a permit, file a disclosure statement with the department of natural resources. The disclosure statement shall include, but not be limited to, a listing of any felony convictions by state or federal agencies, and a listing of other enforcement actions, sanctions, permit revocations or denials by any state or federal authority of every person seeking a permit, including officers, directors, partners and facility or location managers of each person seeking a permit, any violations of Missouri environmental statutes, violations of the environmental statutes of other states or federal statutes and a listing of convictions for any crimes or criminal acts, an element of which involves restraint of trade, price-fixing, intimidation of the customers of another person or for engaging in any other acts which may have the effect of restraining or limiting competition concerning activities regulated pursuant to this chapter or similar laws of other states or the federal government; except that convictions for violations by entities purchased or acquired by an applicant or permittee which occurred prior to the purchase or acquisition shall not be included. The department shall by rule, define those environmental violations which must be reported pursuant to this section. For purposes of this section, additional persons as required by rule shall be named in the statement and violations or convictions of such persons shall be listed. The department or its representative shall verify the information provided on the disclosure statement prior to permit issuance. The disclosure statement shall be used by the department in

determining whether a permit should be granted or denied on the basis of the applicant's status as a habitual violator; however, the department has the authority to make a habitual violator determination independent of the information contained in the disclosure statement. After permit issuance, each facility shall annually file an updated disclosure statement with the department of natural resources on or before March thirty-first of each year. Any county, district, municipality, authority or other political subdivision of this state which owns and operates a sanitary landfill shall be exempt from the provisions of this subsection.

21. Any person seeking a permit to operate a solid waste disposal area, a solid waste processing facility or a resource recovery facility shall, concurrently with the filing of the application for a permit, disclose any convictions in this state of municipal or county public health or land use ordinances related to the management of solid waste. If the department finds that there has been a continuing pattern of serious adjudicated violations by the applicant, the department may deny the application.

22. No permit to construct or permit to operate shall be required pursuant to this section for any utility waste landfill located in a county of the third classification with a township form of government which has a population of at least eleven thousand inhabitants and no more than twelve thousand five hundred inhabitants according to the most recent decennial census, if such utility waste landfill complies with all design and operating standards and closure requirements applicable to utility waste landfills pursuant to sections 260.200 to 260.345 and provided that no waste disposed of at such utility waste landfill is considered hazardous waste pursuant to the Missouri hazardous waste law.

(L. 1972 S.B. 387 § 2, A.L. 1975 S.B. 98, A.L. 1986 S.B. 475, A.L. 1988 H.B. 1207 merged with S.B. 535, A.L. 1990 S.B. 530, A.L. 1991 S.B. 45, A.L. 1995 S.B. 60 & 112, A.L. 1999 H.B. 603, et al.)

Owner or operator shall provide quality assurance and quality control oversight of inspections during area closure, postclosure and corrective action plans, requirements--department may suspend, revoke or modify permit.

260.206. 1. The owner or operator of a solid waste disposal area shall provide for quality assurance and quality control oversight of inspections during implementation of approved solid waste disposal area closure, postclosure, and corrective action plans. The quality assurance and quality control of inspections shall be conducted for conformance with department-approved plans, specifications, operating procedures, and monitoring programs, and for compliance with any rules or regulations promulgated. For the purposes of this section, all quality assurance and quality control oversight of inspections shall be conducted by a person possessing qualifications specified in rules promulgated by the department. The person performing quality assurance and quality control oversight shall certify that the inspections meet all requirements of applicable law and rules.

2. The department reserves the right to suspend, revoke, or modify the permit if the solid waste disposal area construction or operation does not comply with department-approved plans and specifications, operating procedures, monitoring programs, or any rules governing its design or operation.

(L. 1995 S.B. 60 & 112)

Permit not to be issued, when--notice to department of certain crimes, penalty for failure to notify--reinstatement, when.

260.207. 1. The department of natural resources shall not issue a permit to any person for the operation of any solid waste processing facility or solid waste disposal area pursuant to sections 260.200 to 260.345 if such person has been determined to habitually violate Missouri environmental statutes, the environmental statutes of other states or federal statutes pertaining to environmental control or if such person has had three or more convictions, which convictions occurred after August 28, 1990, and within any five-year period, within a court of the United States or of any state other than Missouri or has had two or more convictions within Missouri, after August 28, 1990, and within any five-year period, for any crimes or criminal acts, an element of which involves restraint of trade, price-fixing, intimidation of the customers of another person or for engaging in any other acts which may have the effect of restraining or limiting competition concerning activities regulated under this chapter or similar laws of other states or the federal government; except that convictions for violations by entities purchased or acquired by an applicant or permittee which occurred prior to the purchase or acquisition shall not be included. For the purpose of this section the term "person" shall include any business organization or entity, successor corporation, partnership or subsidiary of any business organization or entity, and the owners and officers thereof, of the entity submitting the application.

2. The director shall suspend, revoke or not renew the permit of any person with a permit to operate any solid waste processing facility or solid waste disposal area if such person has been determined by the department of natural resources to habitually violate the requirements of the Missouri environmental statutes, of the environmental statutes of other states, or of federal statutes pertaining to environmental control, or if such person has had three or more convictions in any court of the United States or of any state other than Missouri or has had two or more convictions within Missouri of crimes as specified herein, if such convictions occur after August 28, 1990, and within any five-year period.

3. Any person applying for a permit to operate any facility pursuant to sections 260.200 to 260.345 shall notify the director of any conviction for a crime which would have the effect of limiting competition. Any person holding a permit shall notify the department of any such conviction of any crime as specified herein within thirty days of the conviction. Failure to notify the director is a class D felony and subject to a fine of one thousand dollars per day for each day unreported.

4. Any person who has had a permit denied, revoked or not renewed due to the provisions of this section may apply to the director for reinstatement after five years have elapsed from the time of the most recent conviction.

(L. 1990 S.B. 530, A.L. 1995 S.B. 60 & 112)

Contracts with specified parties prohibited, when--notice of certain convictions required, penalty.

260.208. No city, county, district, authority or other political subdivision of this state shall enter into a contract or other arrangement for solid waste management services with any person who has been convicted as set out in section 260.207, which convictions occur after August 28, 1990, and within any five-year period, except that the prohibitions of this section shall not apply to any person convicted as provided in section 260.207 after five years have elapsed from the most recent conviction. Any person submitting a bid to a city, county, district, authority or other political subdivision for a contract to provide solid waste management services who, after August 28, 1990, has been convicted of crimes which have the effect of limiting competition as set out in section 260.207, shall notify the city, county, district, authority or other political subdivision of such conviction with the submission of the bid. Any person with a contract for solid waste management services with a city, county, district, authority or other political subdivision of this state who is convicted of crimes which would have the effect of limiting competition as set out in section 260.207, shall notify the city, county, district, authority or other political subdivision of such conviction within thirty days of the conviction. Failure to notify the city, county, district, authority, or other political subdivision as required in this section is a class D felony and subject to a fine of one thousand dollars per day for each day unreported.

(L. 1990 S.B. 530)

Property acquired outside city, county or district for solid waste disposal, compliance with zoning ordinances required.

260.209. 1. Any district, city or county that acquires real or personal property in another incorporated city or in an unincorporated area of a county, by condemnation, purchase, gift, lease, sale or otherwise to establish, operate, maintain, construct, improve, own, control or regulate waste to energy plants, incinerators, recycling centers, processing plants, composting areas, transfer stations, solid waste processing facilities, solid waste disposal area, treatment facilities, storage facilities, or other management areas, shall be subject to and comply with any and all zoning ordinances of the city in which such acquisition was made or if such acquisition is located within an unincorporated area of a county, then such district, city or county making the acquisition shall be subject to and comply with all zoning requirements and ordinances of the county in which the acquisition was made.

2. After August 28, 1999, no political subdivision shall be granted any permit, license, or grant of authority to own, operate or control any land outside its boundaries and used for any purpose subject to regulation pursuant to sections 260.200 to 260.345 without meeting the zoning requirements of the political subdivision in which the land is located in effect on the date of application.

(L. 1990 S.B. 530, A.L. 1992 H.B. 1732, A.L. 1999 H.B. 603, et al.)

Prohibited acts, exception--search warrants to issue, when --investigations, department may conduct, how--demolition waste, disposal of, requirements--building permits, notice of disposal of demolition waste required, form--exceptions--exceptions for Kansas City.

260.210. 1. It is unlawful for any person to:

(1) Dump or deposit, or permit dumping or depositing of any solid wastes onto the surface of the ground or into streams, springs, and all bodies of surface or ground water, whether natural or artificial, within the boundaries of the state except in a solid waste processing facility or solid waste disposal area having a permit as required by section 260.205; provided that, this subdivision shall not prohibit the use or require a permit for the use of solid wastes in normal farming operations or in the processing or manufacturing of other products in a manner that will not create a public nuisance or adversely affect the public health, and shall not prohibit the disposal of or require a permit for the disposal by an individual of solid wastes resulting from his or her own residential activities on property owned or lawfully occupied by him or her when such wastes do not thereby create a public nuisance or adversely affect the public health;

(2) Construct or alter a solid waste processing facility or solid waste disposal area of a solid waste management system without approval from the department;

(3) Conduct any solid waste burning operations in violation of the rules and regulations of the Missouri air conservation commission or the department;

(4) Except as otherwise provided, store, collect, transport, process, or dispose of solid waste in violation of the rules, regulations or orders of the department or in such a manner as to create a public nuisance or adversely affect the public health; or

(5) Refuse entry or access, requested for purposes of inspecting solid waste processing facilities or solid waste disposal areas, to an agent or employee of the department who presents appropriate credentials, or hinder the agent or employee in carrying out the inspection. A suitably restricted search warrant, upon a showing of probable cause in writing and upon oath, shall be issued by any circuit or associate circuit judge having jurisdiction to any such agent or employee for the purpose of enabling him to make such inspection.

2. Information obtained from waste disposed or deposited in violation of this section may be a rebuttable presumption that the person so identified committed the violation of sections 260.200 to 260.345. If the operator or passenger of any vehicle is witnessed by a peace officer or employee of the department of natural resources to have violated the provisions of this section and the identity of the operator is not determined or otherwise apparent, it may be a rebuttable presumption that the person in whose name such vehicle is registered committed the violation.

3. No person shall be held responsible pursuant to this section for the dumping or depositing of any solid waste on land owned or lawfully occupied by him or her without his or her express or implied consent, permission or knowledge.

4. The department shall investigate reports of the dumping or depositing of solid waste or demolition waste in a manner contrary to the requirements of sections 260.200 to 260.345. The

department shall immediately issue a cease and desist order if it determines that any person has been or is dumping or depositing solid waste or demolition waste, or has allowed the dumping or disposal of solid waste or demolition waste or has received compensation for same, in a manner contrary to sections 260.200 to 260.345. The department shall order the owner of the property or the person placing solid waste or demolition waste thereon, or both, to remove all solid waste from the premises if it determines that the waste might be reasonably expected to cause a public nuisance or health hazard.

5. The department shall order a site cleaned up pursuant to the provisions of section 260.230, when it determines that the property owner or the operator has accepted remuneration or otherwise benefited financially for placing solid waste or demolition waste in or on the site in contravention of this section. Persons who knowingly haul solid waste or demolition waste to a site which is operating without a permit, persons who operate such a site and persons who own the property where the solid waste or demolition waste is being dumped or deposited shall be jointly and severally liable for cleanup costs and any damage to third parties caused by the dumping or disposing of solid waste or demolition waste on the property if the owner or operator has accepted remuneration or otherwise benefited financially from such disposal. The provisions of sections 260.230 and 260.240, relating to the issuance of orders, shall be applicable to an action pursuant to this section. Any person aggrieved by any action of the department pursuant to this section may appeal in the manner provided in section 260.235. Any person may bring civil action for actual and exemplary damages against the responsible party if the person has sustained injury due to violations of this section.

6. Notwithstanding subsection 1 of section 260.250, any solid waste disposal area or solid waste processing facility serving a city with a population of more than four hundred thousand inhabitants may accept yard waste commingled with solid waste that results from an illegal dump cleanup activity or program conducted by the local government of such city pursuant to this section. The local government of such city shall provide certification to the solid waste disposal area or solid waste processing facility that the origin of the yard waste is from the cleanup of illegally dumped solid waste.

7. Any person who engages in building construction, modification or in construction, modification or demolition which produces demolition waste, in types and quantities established by the department, shall dispose of such waste in a demolition or sanitary landfill or other authorized sites as provided by rule. Each such person shall maintain records of sites used for demolition disposal for a period of one year. These records shall be made available to the department upon request.

8. Cities and counties which issue building permits shall reprint the following on each permit or on a separate notice: "Notice: The disposal of demolition waste is regulated by the department of natural resources pursuant to chapter 260, RSMo. Such waste, in types and quantities established by the department, shall be taken to a demolition landfill or a sanitary landfill for disposal."

9. A demolition landfill may accept clean fill, waste resulting from building or demolishing structures and all other waste not required to be placed in a sanitary landfill or a hazardous waste disposal facility for final disposition.

10. Notwithstanding subsection 7 of this section, certain wastes may be disposed of as provided by this subsection:

(1) A person engaged in any activity which produces clean fill may use such material for fill, reclamation or other beneficial purposes on his or her own property or on the property of another person with the permission of the owner of such property, provided that such use does not violate any state law or local ordinance or order;

(2) A person engaged in any activity which produces wood waste may reuse or recycle such waste or may dispose of wood waste on the site where generated if such disposal is in compliance with applicable state law or local ordinances or orders;

(3) A person who engages in clearance, trimming or removal of trees, brush or other vegetation may use wood wastes from such activities for beneficial purposes including, but not limited to, firewood, ground cover, erosion control, mulch, compost or cover for wildlife.

(L. 1972 S.B. 387 § 3, A.L. 1975 S.B. 98, A.L. 1978 H.B. 1634, A.L. 1990 S.B. 530, A.L. 2000 H.B. 1238)

Demolition waste, criminal disposition of--degrees, penalties.

260.211. 1. A person commits the offense of criminal disposition of demolition waste in the first degree if he purposely or knowingly disposes of or causes the disposal of more than two thousand pounds or four hundred cubic feet of such waste in violation of section 260.210. Demolition waste shall not include clean fill or vegetation. Criminal disposition of demolition waste in the first degree is a class A misdemeanor. In addition to other penalties prescribed by law, a person convicted of criminal disposition of demolition waste in the first degree is subject to a fine not to exceed twenty thousand dollars, except as provided below. The magnitude of the fine shall reflect the seriousness or potential seriousness of the threat to human health and the environment posed by the violation, but shall not exceed twenty thousand dollars, except that if a court of competent jurisdiction determines that the person responsible for illegal disposal of demolition waste under this subsection did so for remuneration as a part of an ongoing commercial activity, the court shall set a fine which reflects the seriousness or potential threat to human health and the environment which at least equals the economic gain obtained by the person, and such fine may exceed the maximum established herein.

2. The court shall order any person convicted of illegally disposing of demolition waste upon his own property for remuneration to clean up such waste and, if he fails to clean up the waste or if he is unable to clean up the waste, the court may notify the county recorder of the county containing the illegal disposal site. The notice shall be designed to be recorded on the record.

3. Any person who pleads guilty or is convicted of criminal disposition of demolition waste in the first degree a second or subsequent time shall be guilty of a class D felony, and subject to the penalties provided in subsection 1 of this section in addition to those penalties prescribed by law.

4. A person commits the offense of criminal disposition of demolition waste in the second degree if he purposely or knowingly disposes of or causes the disposal of less than the amount of demolition waste specified in subsection 1 of this section in violation of section 260.210. Criminal disposition of demolition waste in the second degree is a class C misdemeanor.

5. In addition to other penalties prescribed by law, a person convicted of criminal disposition of demolition waste in the second degree is subject to a fine, and the magnitude of the fine shall reflect the seriousness or potential seriousness of the threat to human health and the environment posed by the violation, but shall not exceed two thousand dollars.

6. Any person who pleads guilty or is convicted of criminal disposition of demolition waste in the second degree a second or subsequent time shall be guilty of a class D felony, and subject to the penalties provided in subsection 5 of this section in addition to those penalties prescribed by law.

7. The court may order restitution by requiring any person convicted under this section to clean up any demolition waste he illegally dumped and the court may require any such person to perform additional community service by cleaning up and properly disposing of demolition waste illegally dumped by other persons.

8. The prosecutor of any county or circuit attorney of any city not within a county may, by information or indictment, institute a prosecution for any violation of the provisions of this section.

(L. 1990 S.B. 530)

CROSS REFERENCE: Duty of prosecuting attorney, RSMo 577.071

Solid waste, criminal disposition of--degrees, penalties.

260.212. 1. A person commits the offense of criminal disposition of solid waste in the first degree if he purposely or knowingly disposes of or causes the disposal of more than five hundred pounds or one hundred cubic feet of commercial or residential solid waste on any property in this state other than a sanitary landfill in violation of section 260.210. Criminal disposition of solid waste in the first degree is a class A misdemeanor. In addition to other penalties prescribed by law, a person convicted of criminal disposition of solid waste in the first degree is subject to a fine, and the magnitude of the fine shall reflect the seriousness or potential seriousness of the threat to human health and the environment posed by the violation, but shall not exceed twenty thousand dollars, except that if a court of competent jurisdiction determines that the person responsible for illegal disposal of solid waste under this subsection did so for remuneration as a part of an ongoing commercial activity, the court shall set a fine which reflects the seriousness or potential threat to human health and the environment which at least equals the economic gain obtained by the person, and such fine may exceed the maximum established herein.

2. The court shall order any person convicted of illegally disposing of solid waste upon his own property for remuneration to clean up such waste and, if he fails to clean up the waste or if he is unable to clean up the waste, the court may notify the county recorder of the county containing the illegal disposal site. The notice shall be designed to be recorded on the record.

3. Any person who pleads guilty or is convicted of criminal disposition of solid waste in the first degree a second or subsequent time shall be guilty of a class D felony. If a court of competent jurisdiction determines that the person responsible for illegal disposal of solid waste under this subsection did so for remuneration as a part of an ongoing commercial activity, the court shall set a fine which reflects the seriousness or potential threat to human health and the environment which equals at least three times the economic gain obtained by the person, and such fine may exceed the maximum established in this section.

4. A person commits the offense of criminal disposition of solid waste in the second degree if he purposely or knowingly disposes of or causes the disposal of less than the amount of commercial or residential solid waste specified in subsection 1 of this section on any property in this state other than a permitted sanitary landfill in violation of section 260.210. Criminal disposition of solid waste in the second degree is a class C misdemeanor.

5. In addition to other penalties prescribed by law, a person convicted of criminal disposition of solid waste in the second degree is subject to a fine, and the magnitude of the fine shall reflect the seriousness or potential seriousness of the threat to human health and the environment posed by the violation, but shall not exceed two thousand dollars.

6. Any person who pleads guilty or is convicted of criminal disposition of solid waste in the second degree a second or subsequent time shall be guilty of a class D felony. If a court of competent jurisdiction determines that the person responsible for illegal disposal of solid waste under this subsection did so for remuneration as a part of an ongoing commercial activity, the court shall set a fine which reflects the seriousness or potential threat to human health and the environment which equals at least three times the economic gain obtained by the person, and such fine may exceed the maximum established in this subsection.

7. The court may order restitution by requiring any person convicted under this section to clean up any commercial or residential solid waste he illegally dumped and the court may require any such person to perform additional community service by cleaning up commercial or residential solid waste illegally dumped by other persons.

8. The prosecutor of any county or circuit attorney of any city not within a county may, by information or indictment, institute a prosecution for any violation of the provisions of this section.

9. Any person shall be guilty of conspiracy as defined in section 564.016, RSMo, if he knows or should have known that his agent or employee has committed the acts described in sections 260.210 to 260.212 while engaged in the course of employment.

(L. 1990 S.B. 530)

CROSS REFERENCE: Duty of prosecuting attorney, RSMo 577.071

Disclosure of landfill, sale of property, required.

260.213. No person may knowingly sell, convey or transfer title to any property that contains a permitted or unpermitted solid waste disposal site or demolition landfill, without disclosing to the buyer early in the negotiation process the existence and location of the site. The seller shall also notify the buyer that he may be assuming liability to the state for any remedial action at the site, except that the sale, conveyance or transfer of property shall not absolve any person responsible for the illegal disposition of solid waste, including the seller, of liability for any remedial action at the site.

(L. 1990 S.B. 530)

Solid wastes, how handled--duties of cities and counties--exemptions -- charges, how stated, how collected.

260.215. 1. Except as provided in subsection 4 of this section, each city and each county or a combination of cities and counties shall provide individually or collectively for the collection and disposal of solid wastes for those areas within its boundaries that are to be served by the solid waste management system; shall be responsible for implementing their approved plan required by section 260.220 as it relates to the storage, collection, transportation, processing, and disposal of their solid wastes; and may purchase all necessary equipment, acquire all necessary land, build any necessary buildings, incinerators, transfer stations, or other structures, lease or otherwise acquire the right to use land or equipment. Each city and county may levy and collect charges for the necessary cost of providing such services, and may levy an annual tax not to exceed ten cents on the one hundred dollars assessed valuation, as authorized by article X, section 11(c), of the constitution for public health purposes to implement a plan for solid waste management, and to do all other things necessary to provide for a proper and effective solid waste management system; except that, the county may not levy a service charge or annual tax upon the inhabitants of any incorporated city, town or village that has an approved plan for solid waste management, unless the city, town or village contracts with the county for solid waste management and consents to the county service charge or tax levy. The tax or service charge authorized by this section shall not be levied if the tax or service charge is levied pursuant to some other provision of law, but if a tax is levied for the operation of a sanitary landfill and such tax is less than the maximum amount authorized by this section, a tax in an amount equal to the difference between such tax and that authorized in this section may be levied and collected.

2. Any city or county may adopt ordinances or orders, rules, regulations, or standards for the storage, collection, transportation, processing or disposal of solid wastes which shall be in conformity with the rules and regulations adopted by the department for solid waste management systems. Nothing in sections 260.200 to 260.245 shall usurp the legal right of a city or county from adopting and enforcing local ordinances, rules, regulations, or standards for the storage, collection, transportation, processing, or disposal of solid wastes equal to or more stringent than the rules or regulations adopted by the department pursuant to sections 260.200 to 260.245. Any county or city which adopts orders or ordinances for the management of solid waste shall ensure that such orders or ordinances provide for safe and adequate management of solid waste pursuant to an approved plan under section 260.220 and are not substantially inconsistent with the requirements of sections 260.200 and 260.245 and the rules and regulations promulgated pursuant thereto.

3. (1) Cities or counties may contract as provided in chapter 70, RSMo, with any person, city, county, common sewer district, political subdivision, state agency or authority in this or other states to carry out their responsibilities for the storage, collection, transportation, processing, or disposal of solid wastes.

(2) The board of trustees of any common sewer district incorporated pursuant to sections 204.250 to 204.470, RSMo, may petition the circuit court of the judicial circuit in which is located the county containing the largest portion of the land area in the district to amend the decree of incorporation to permit the common sewer district to engage in the construction, operation and maintenance of a solid waste disposal facility to serve properties within the common sewer district. The petition shall be filed by the board of trustees and all proceedings shall be conducted in the same manner as in an action for the initial formation of a common sewer district pursuant to sections 204.250 to 204.470, RSMo, except that no vote of the residents of the district shall be required. The

construction, operation and maintenance of a solid waste disposal facility by a common sewer district shall comply with the provisions of sections 204.250 to 204.470, RSMo, in the same manner as they shall comply to like functions relating to sewer facilities, and comply with the provisions of this chapter relating to solid waste disposal.

4. (1) Nothing contained in this section and section 260.220 shall apply to any unincorporated area in all second, third and fourth class counties or any county of the first class with a population of less than one hundred thousand in accordance with the most recent decennial census or to any incorporated city having a population of five hundred or less located in such counties; except that any exempted city, village or county may, after public hearing held on not less than twenty days' public notice by publishing a copy of the notice in some newspaper qualified to publish legal notices under chapter 493, RSMo, and having a general circulation within the city, village or county once each week for three consecutive weeks, elect through its governing body to purchase equipment, acquire land, build buildings, incinerators, transfer stations or other structures, lease or otherwise acquire the right to use land or equipment, levy and collect charges for services, levy an annual tax, and do all other things necessary to provide for a proper and effective solid waste management system, as provided in subsection 1 of this section, and may adopt ordinances, rules, regulations or standards as provided in subsection 2 of this section, and may contract as provided in subsection 3 of this section.

(2) No city or county shall be required itself to operate or contract for the operation of solid waste collection, transportation or disposal services, or to collect service charges therefor, except to the extent that the department finds after public notice and public hearing, that privately owned and operated services are not reasonably available on a voluntary basis by contract or otherwise, or that the use of or failure to use such privately owned services has substantially endangered the public health or has resulted in a substantial public nuisance. Upon such a finding by the department, such city or county shall itself operate or contract for the operation of such solid waste collection, transportation and disposal services as may be reasonably necessary to remedy such danger to the public health or to abate such public nuisance, until such city or county, by its solid waste management plan, demonstrates that the storage, collection, transportation, processing and disposal of solid wastes will by other means be carried out in a manner which protects the public health, prevents the creation of public nuisances, and prevents the pollution of the land, air and water of the state. Any person aggrieved by the finding of the department, including any city or county or any privately owned or operated service, may appeal as provided in chapter 536, RSMo.

5. Any city or county which establishes a service charge for solid waste collection services shall state the service charge separately from any other charge of any kind. No city or county shall withhold, or authorize the withholding of, any other utility service for failure to collect the separately stated service charge.

6. Any city or county may contract with any municipal utility, investor owned utility, REA co-op, public water supply district, county sewer district, or any other type of utility to collect monthly service fees for the collection of solid waste.

(L. 1972 S.B. 387 § 4, A.L. 1975 S.B. 98, A.L. 1986 S.B. 475, A.L. 1987 H.B. 384 Revision, A.L. 1988 H.B. 1207, A.L. 1992 H.B. 1732)

Effective 6-19-92

(1976) This section allows imposition of a "charge" in addition to a tax and a two dollar and forty-five cent charge made to persons not using the service is not a tax and does not require a vote. *Craig v. City of Macon (Mo.)*, 543 S.W.2d 772.

(2000) Section allows counties to regulate the location of solid waste facilities. *L.C. Development Company, Inc. v. Lincoln County*, 26 S.W.3d 336 (Mo.App.E.D.).

Solid waste disposal in receptacle of another, prohibited--penalty.

260.216. No person shall place in excess of one half of a cubic foot of solid waste, as defined in section 260.200, RSMo, in any receptacle owned or used by any other person for the storage of solid waste prior to pickup and disposal in a solid waste disposal area or sanitary landfill without the permission of the owner or user of such receptacle or unless the receptacle is for public use. Any person who violates this section shall be guilty of an infraction.

(L. 1992 H.B. 1732 § 1)

*Transferred 1993; formerly 578.155

Vehicles transporting solid wastes, weight limits.

260.218. Notwithstanding any other provision of law to the contrary, any truck, tractor-trailer or other combination engaged in transporting solid waste, as defined by section 260.200, between any city and a solid waste disposal area or solid waste processing facility approved by the department of natural resources or department of health and senior services, may operate with a weight not to exceed twenty-two thousand four hundred pounds on one axle or a weight not to exceed forty-four thousand eight hundred pounds on any tandem axle; but nothing in this section shall be construed to permit the operation of any motor vehicle on the interstate highway system in excess of the weight limits imposed by federal statute; and no such truck, tractor-trailer or other combination shall exceed the width and length limitations provided in section 304.190, RSMo.

(L. 1976 H.B. 1514 § 2, A.L. 1983 H.B. 539)

Effective 3-30-83

Plans to be submitted, contents of--disapproval, effect of.

260.220. 1. Except as otherwise provided by subsection 4 of section 260.215, on or before January 1, 1976, each county and city shall submit to the department an officially adopted plan for a solid waste management system or systems serving areas within its jurisdiction and shall, from time to time, submit each such revision of said plan as it deems necessary or as the department may require, but this provision shall not prohibit cities and counties to contract as provided in chapter 70, RSMo, for development and submission of a joint plan or to authorize their respective regional planning commission to develop and submit the required plan.

2. Every plan shall:

(1) Delineate areas within the jurisdiction of the political subdivision where solid waste management systems are in existence and areas where the solid waste management systems are planned to be available within a ten-year period;

(2) Reasonably conform to the rules and regulations adopted by the department for implementation of sections 260.200 to 260.245;

(3) Provide for the orderly extension of solid waste management systems in a manner consistent with the needs and plans of the whole area, and in a manner which will minimize pollution of the waters or air of the state, prevent public nuisances or health hazards and shall otherwise provide for the safe and sanitary disposal of solid waste;

(4) Take into consideration existing comprehensive plans, population trend projections, engineering and economics so as to delineate with practicable precision those portions of the area which may reasonably be expected to be served by a solid waste management system;

(5) Take into consideration existing acts and regulations affecting the development, use and protection of air, water or land resources;

(6) Establish a time schedule and proposed method of financing for the development, construction and operation of the planned solid waste management systems together with the estimated cost thereof; and

(7) Include such other reasonable information as the department shall require.

3. The plan shall be reviewed by appropriate official planning agencies within the area covered by the plan for consistency with programs of comprehensive planning for the area, and all such reviews shall be transmitted to the department with the proposed plan.

4. In the event any plan or part thereof is disapproved, the department shall furnish any and all reasons for such disapproval, and any city, county, or regional planning commission whose plan is disapproved shall within sixty days revise and resubmit the plan for approval or may request a hearing in accordance with section 260.235.

5. The department may provide technical assistance to counties, cities, and regional planning commissions in coordinating plans for solid waste management systems required by sections 260.200 to 260.245, including revisions of such plans.

6. The director may institute appropriate action under section 260.230 to compel submission of plans in accordance with sections 260.200 to 260.245 and the rules and regulations adopted pursuant to sections 260.200 to 260.245.

(L. 1972 S.B. 387 § 5, A.L. 1975 S.B. 98)

Duties of department--rules and regulations, promulgation of, procedures--model solid waste management plans, contents --coordination with other state agencies.

260.225. 1. The department shall administer sections 260.200 to 260.345 to maximize the amount of recovered materials and to minimize disposal of solid waste in sanitary landfills. The department shall, through its rules and regulations, policies and programs, encourage to the maximum extent practical, the use of alternatives to disposal. To accomplish these objectives, the department shall:

(1) Administer the state solid waste management program pursuant to the provisions of sections 260.200 to 260.345;

(2) Cooperate with appropriate federal, state, and local units of government of this or any other state, and with appropriate private organizations in carrying out its authority under sections 260.200 to 260.345;

(3) Promulgate and adopt, after public hearing, such rules and regulations relating to solid waste management systems as shall be necessary to carry out the purposes and provisions of sections 260.200 to 260.345;

(4) Develop a statewide solid waste management plan in cooperation with local governments, regional planning commissions, districts, and appropriate state agencies;

(5) Provide technical assistance to cities, counties, districts, and authorities;

(6) Develop and conduct a mandatory solid waste technician training course of study;

(7) Conduct and contract for research and investigations in the overall area of solid waste storage, collection, recycling, recovery, processing, transportation and disposal, including, but not limited to, new and novel procedures;

(8) Subject to appropriation by the general assembly, establish criteria for awarding state-funded solid waste management planning grants to cities, counties, and districts, allocate funds, and monitor the proper expenditure of funds;

(9) Issue such permits and orders and conduct such inspections as may be necessary to implement the provisions of sections 260.200 to 260.345 and the rules and regulations adopted pursuant to sections 260.200 to 260.345;

(10) Initiate, conduct and support research, demonstration projects, and investigations with applicable federal programs pertaining to solid waste management systems;

(11) Contract with cities, counties, districts and other persons to act as its agent in carrying out the provisions of sections 260.200 to 260.345 under procedures and conditions as the department shall prescribe.

2. The department shall prepare model solid waste management plans suitable for rural and urban areas which may be used by districts, counties and cities. In preparing the model plans, the department shall consider the findings and recommendations of the study of resource recovery conducted pursuant to section 260.038, and other relevant information. The plans shall conform with the requirements of section 260.220 and section 260.325 and shall:

(1) Emphasize waste reduction and recycling;

(2) Provide for economical waste management through regional cooperation;

(3) Be designed to achieve a reduction of forty percent in solid waste disposed, by weight, by January 1, 1998;

(4) Establish a means to measure the amount of reduction in solid waste disposal;

(5) Provide for the elimination of small quantities of hazardous waste, including household hazardous waste, from the solid waste stream; and

(6) Be designed to guide planning in districts, cities and counties including cities and counties not within a district.

3. The model plan shall be distributed to the executive board of each solid waste district and to counties and cities not within a district by December 1, 1991.

4. No rule or portion of a rule promulgated under the authority of sections 260.200 to 260.345 shall become effective unless it has been promulgated pursuant to the provisions of section 536.024, RSMo.

5. In coordination with other appropriate state agencies, including, but not limited to, the division of commerce and industrial development, the office of administration, the environmental improvement and energy resource authority, and the public service commission, the department shall perform the following duties in order to promote resource recovery in the state in ways which are economically feasible:

- (1) Identify markets for recovered materials and for energy which could be produced from solid waste and household hazardous waste;
- (2) Provide technical assistance pertaining to all aspects of resource recovery to cities, counties, districts, industries and other persons;
- (3) Identify opportunities for resource recovery programs in state government and initiate actions to implement such programs;
- (4) Expand state contracts for procurement of items made from recovered materials;
- (5) Initiate recycling programs within state government;
- (6) Provide a clearinghouse of consumer information regarding the need to support resource recovery, utilize and develop new resource recovery programs around existing enterprises, request and purchase recycled products, participate in resource conservation activities and other relevant issues;
- (7) Identify barriers to resource recovery and resource conservation, and propose remedies to these barriers; and
- (8) Initiate activities with appropriate state and local entities to develop markets for recovered materials.

(L. 1972 S.B. 387 § 6, A.L. 1975 S.B. 98, A.L. 1986 S.B. 475, A.L. 1988 S.B. 535, A.L. 1990 S.B. 530, A.L. 1993 S.B. 52, A.L. 1995 S.B. 3)

(1997) Section declared unconstitutional pursuant to article II, section 1 and article III, sections 21 and 31 of the Missouri Constitution. Missouri Coalition for the Environment v. Joint Committee on Administrative Rules, 948 S.W.2d 125 (Mo.banc).

Closure of facility, plan to be submitted, contents--notice, when --financial assurance instrument, release of, when--exceptions.

260.226. 1. Each operator of a solid waste disposal area shall insure that the area is properly closed upon cessation of operations. Each operator shall submit a closure plan with the application for a permit. Operators of currently permitted sanitary landfills shall submit a closure plan within one year from August 13, 1986. The plan, as approved by the department, shall include at least the following:

- (1) A description of how and when the area will be closed and, if applicable, a description of plans for closing portions of the area during the operational life of the area;
- (2) A written estimate, in current dollars, of the cost of closure of the total area and, if applicable, an estimate of the cost of closing portions of the area during the

operational life of the area in accordance with sections 260.200 to 260.245. The estimate shall equal the cost of closure at the time in the area's life when the extent and manner of its operation would make closure the most expensive unless the closure plan demonstrates that the most expensive closure can be avoided in which case the estimate shall equal the cost of closure based upon the closure plan.

2. The operator shall amend the closure plan whenever changes in operating plans, area design or closure costs affect the closure plan. When the operator requests a permit modification to authorize a change in operating plans or area design, he shall request a modification of the closure plan at the same time.

3. The operator shall notify the department at least one hundred eighty days prior to the date he expects to begin closure. Closure shall begin within thirty days after the date on which the operator receives the final volume of waste.

4. The permittee shall provide a financial assurance instrument in such amount and form as prescribed by the department to insure that, upon abandonment, cessation or interruption of the operation of the area, an approved closure plan is completed. Operators of currently permitted disposal areas shall provide a suitable financial assurance instrument prior to January 1, 1988. Any interest which accrues to any financial assurance instrument established pursuant to this section shall remain with that instrument and shall be applied against the operator's obligation under this section until the instrument is released by the department as provided in subsection 5 of this section.

5. The department shall inspect a solid waste disposal area, or some portion thereof as specified in the closure plan, when notified by the operator that the area has been closed. If the inspection reveals that the approved closure plan has been properly effected, the director shall authorize the release, or proportional release, of the financial instrument required under this section.

6. Operators of a solid waste disposal area as part of a permit issued under sections 444.500 to 444.905, RSMo, shall not be required to submit closure and post-closure plans or provide the financial assurance instruments required under this act*.

(L. 1986 S.B. 475)

*"This act" (S.B. 475, 1986) contained numerous sections. Consult Disposition of Sections table for a definitive listing.

Postclosure plan, contents--financial assurance instrument required--owner or operator of sanitary or demolition landfill to take corrective action, when--plan required--financial assurance, amount, form required, released when.

260.227. 1. The operator of a sanitary landfill shall be responsible for postclosure monitoring and care to ensure that the area does not present a threat to the public health or the environment. The department may require the operator of other solid waste disposal areas to be responsible for postclosure monitoring and care. The operator shall provide proper care for the area for thirty years after closure; provided, however, that the department may shorten or extend the postclosure period. The operator must demonstrate that the site does not and in all likelihood will not present a threat to public health or the environment to reduce the postclosure period. The department may extend the postclosure period if it finds that site conditions warrant an extension

unless the operator demonstrates that the area does not and in all likelihood will not present a threat to public health or the environment.

2. Each operator required to submit a postclosure plan shall submit the plan with the permit application. Operators of currently permitted sanitary landfills shall submit a postclosure plan within one year of August 13, 1986. The postclosure plan as amended and as approved by the department shall contain at least the following:

- (1) Plans for monitoring the area after closure;
- (2) The planned maintenance schedule; and
- (3) An estimate of the cost of postclosure monitoring and care for the entire postclosure period.

3. The operator shall amend this plan whenever changes in operating plans or events occur, during the active life of the area or the postclosure period, which affect the postclosure plan.

4. When a permit modification is requested during the active life of the area to authorize a change in operating plans or area design, the postclosure plan shall be subject to review.

5. As a condition of granting a permit to operate any sanitary landfill, the department shall require the permittee to provide a financial assurance instrument in such amount and form as prescribed by the department to ensure the implementation of the postclosure plan. The department may require operators of other solid waste disposal areas to submit a financial assurance instrument to ensure the implementation of the postclosure plan. Operators of a permitted sanitary landfill and operators of other solid waste disposal areas designated by the department which accept solid waste after January 1, 1987, shall provide financial assurance for that area before January 1, 1988. Any interest which accrues to any financial assurance instrument established pursuant to this section shall remain with that instrument and shall be applied against the operator's obligation under this section until the instrument is released by the department as provided in subsection 7 of this section.

6. Prior to the issuance of a permit, operators electing to use a secured trust, or a similar financial assurance instrument, shall deposit an amount which is at least equal to the estimated cost of monitoring and care for the entire permitted area for one year. The operator shall annually deposit an amount equal to at least twice the estimated annual postclosure monitoring and care cost until moneys in the fund equal the estimated monitoring and care cost for the postclosure period. The operator shall make additional contributions when subsequent changes in the operating plan, area design or postclosure care requirements increase the cost of postclosure monitoring and care.

7. The department shall periodically inspect solid waste disposal areas during the postclosure period to ensure that the operator is properly monitoring and caring for the area. The department shall review the area upon the termination of the postclosure period.

8. The owner or operator of a sanitary or demolition landfill shall take corrective action to mitigate threats to the public health or the environment.

9. Once an identified release of contaminants has been determined to have occurred, the owner or operator of a sanitary or demolition landfill shall provide a correction action plan for remediation of groundwater contamination, surface water contamination, or gas migration. The department may extend the corrective action period or require alternative measures if it finds that the remediation measures do not effectively mitigate the threat.

10. Each owner or operator required to submit a corrective action plan as a result of an identified release of contaminants shall submit, within fourteen days of selecting the proposed remediation measures, the plan and a schedule for implementing the measures for approval by the department. Such approval or disapproval must be granted within fourteen days of receipt by the department.

11. Within one hundred twenty days of selection of the remediation measures, the owner or operator of a sanitary or demolition landfill shall provide a financial assurance instrument in such amount and form as prescribed by the department to ensure the implementation of the corrective action plan. Any interest which accrues to any financial assurance instrument established pursuant to this section shall remain with that instrument and shall be applied against the operator's obligation under this section until the instrument is released by the department.

12. The department shall periodically inspect the sanitary or demolition landfill during the corrective action period to ensure that the operator is properly implementing the corrective action remediation plan. The department shall review the area upon completion of the corrective action measures. When the department determines that the corrective action has been completed, the corrective action financial assurance instrument shall be released.

(L. 1986 S.B. 475, A.L. 1992 H.B. 1732, A.L. 1995 S.B. 60 & 112)

Failure to implement closure, postclosure plan or corrective action plan, forfeiture of collateral, when.

260.228. 1. If the operator of a solid waste disposal area fails to properly implement the closure or postclosure plan or the corrective action plan required for a sanitary or demolition landfill, the director shall order the operator to implement such plan. Such an order shall be issued prior to closure if the department determines that the area has not operated for a period of ninety days and implementation of the closure plan is necessary to prevent a public nuisance or to protect the public health.

2. The department shall give written notice to the operator of any violation of sections 260.226 and 260.227, or noncompliance with any of the rules and regulations promulgated by the department under sections 260.226 and 260.227. If corrective measures approved by the department are not commenced within a specified and reasonable time, the department shall order forfeiture of all or that part of the operator's collateral necessary to implement the closure and postclosure and corrective action plans. Any operator aggrieved by a forfeiture order may appeal as provided in section 260.235. Forfeited collateral shall be placed into the general revenue fund to be appropriated to and expended by the department to implement the closure and postclosure plans. If the operator's financial assurance instrument is insufficient for implementation of the closure and postclosure and corrective action plans, the department shall institute a civil action in a court of competent jurisdiction to recover from the operator all additional costs incurred.

(L. 1986 S.B. 475, A.L. 1995 S.B. 60 & 112)

Department may order repairs, alterations, construction or reconstruction, when--injunctive relief, when.

260.230. 1. If the department finds that the storage, collection, transportation, processing or disposal of solid wastes subject to the provisions of sections 260.200 to 260.245 is in violation of any rule or regulation adopted by the department pursuant to sections 260.200 to 260.245 or might reasonably be expected to cause pollution of the land, air, or waters of the state or is creating a public nuisance or health hazard, the department may order the person to alter its storage, collection, transportation, processing or disposal systems to correct such violation causing the health hazard, pollution, or public nuisance. Such order shall specify the length of time, after issuance of the order, within which the facility or area shall be repaired, altered, constructed or reconstructed. In addition, the director may revoke, or suspend, the permit for a solid waste disposal area or solid waste processing facility.

2. Whenever it appears to the department that any person has engaged in, or is about to engage in, any acts or practices that have or will constitute violation of this law, or any rule or regulation promulgated thereunder, the director may request, and it shall be the duty of the county prosecuting attorney, or the attorney general, to bring an action in the circuit court to enjoin the acts or practices and to enforce compliance with this law or any rule or regulation promulgated thereunder. In any such action, the court may grant to the department such prohibitory or mandatory injunctive relief as the facts may warrant.

(L. 1972 S.B. 387 § 7, A.L. 1975 S.B. 98, A.L. 1986 S.B. 475, A.L. 1991 S.B. 45)

Hearing, when, procedure--review, how--injunction based on seriousness of threat to environment--performance bond required, forfeited, when.

260.235. 1. Any person aggrieved by a forfeiture of any financial assurance instrument, civil or administrative penalty or denial, suspension or revocation of a permit required by section 260.205 or a modification to a permit issued under section 260.205 or any disapproval of the plan required by section 260.220, may within thirty days of notice of such action request a hearing. The notice of the department shall be effected by certified mail and shall set forth the reasons for such forfeiture, disapproval, denial, suspension, civil penalty or revocation. The department may seek an injunction in the circuit court in which the facility is located requiring the facility for which the transfer of ownership has been denied, or the permit or modification of the permit has been denied, suspended or revoked, to cease operations from the date ordered by the court until such time as the appeal is resolved or obtain a performance bond in the amount and manner as prescribed by rule. The department's action seeking an injunction shall be based on the seriousness of the threat to the environment which continued operation of the facility poses. The bond shall remain in place until the appeal is resolved. If the department's decision is upheld, the bond shall be forfeited and placed in a separate subaccount of the solid waste management fund.

2. The hearing shall be conducted by the director or his designated representative in accordance with the procedures set forth in sections 536.070, 536.073, 536.077, 536.080, and 536.090, RSMo. The decision of the department shall become final thirty days after delivery or certified mailing of a copy of it to the person. Such decisions may be appealed to the administrative hearing commission pursuant to sections 536.063 to 536.095, RSMo, and shall be subject to judicial review of a final decision as provided in sections 536.100 to 536.140, RSMo.

(L. 1972 S.B. 387 § 8, A.L. 1975 S.B. 98, A.L. 1986 S.B. 475, A.L. 1995 S.B. 60 & 112)

Severability of provisions.

260.236. The provisions of this act* shall be severable and if any phrase, clause, sentence or provision of this act* is declared by a court of competent jurisdiction to be contrary to the constitution, the validity of the remainder of this act* and the applicability thereof shall not be affected thereby. All applications for permits or expansions of any solid waste disposal area in progress prior to January 1, 1986, shall be processed by the department under the statutes, rules and regulations in effect as of January 1, 1986. Such applicant shall comply with the provisions of subsections 7 and 10 of section 260.205, and shall meet the closure and postclosure requirements for currently permitted disposal areas within the time periods specified in sections 260.226 and 260.227.

(L. 1986 S.B. 475)

*"This act" (S.B. 475, 1986) contained numerous sections. Consult Disposition of Sections table for a definitive listing.

Violations, how proceeded against--county regulations, how enforced, penalty for violation--exceptions.

260.240. 1. In the event the director determines that any provision of sections 260.200 to 260.245 or any standard, rule, regulation, final order or approved plan promulgated pursuant thereto is being, was, or is in imminent danger of being violated, the director may, in addition to those remedies provided in section 260.230, cause to have instituted a civil action in any court of competent jurisdiction for injunctive relief to prevent any such violation or further violation or in the case of violations concerning a solid waste disposal area or a solid waste processing facility, for the assessment of a penalty not to exceed one thousand dollars per day for each day, or part thereof, the violation occurred and continues to occur, or both, as the court deems proper. A civil monetary penalty under this section shall not be assessed for a violation where an administrative penalty was assessed under section 260.249. The director may request either the attorney general or a prosecuting attorney to bring any action authorized in this section in the name of the people of the state of Missouri. Suit can be brought in any county where the defendant's principal place of business is located or where the violation occurred. Any offer of settlement to resolve a civil penalty under this section shall be in writing, shall state that an action for imposition of a civil penalty may be initiated by the attorney general or a prosecuting attorney representing the department under authority of this section, and shall identify any dollar amount as an offer of settlement which shall be negotiated in good faith through conference, conciliation and persuasion.

2. Any rule, regulation, standard or order of a county commission, adopted pursuant to the provisions of sections 260.200 to 260.245, may be enforced in a civil action for mandatory or prohibitory injunctive relief or for the assessment of a penalty not to exceed one hundred dollars per day for each day, or part thereof, that a violation of such rule, regulation, standard or order of a county commission occurred and continues to occur, or both, as the commission deems proper.

The county commission may request the prosecuting attorney or other attorney to bring any action authorized in this section in the name of the people of the state of Missouri.

3. The liabilities imposed by this section shall not be imposed due to any violation caused by an act of God, war, strike, riot or other catastrophe.

(L. 1972 S.B. 387 § 9, A.L. 1975 S.B. 98, A.L. 1993 S.B. 80, et al.)

Permit not to be issued, when.

260.241. A permit shall not be issued to any person who is determined by the department to habitually violate or to have habitually violated the requirements of the Missouri environmental statutes,* the environmental statutes of other states, or * federal statutes pertaining to environmental control or has had two or more convictions within Missouri, after August 28, 1990, and within any five-year period, for crimes or criminal acts, an element of which involves restraint of trade, price-fixing, intimidation of the customers of another person or for engaging in any other acts which may have the effect of restraining or limiting competition concerning activities regulated under this chapter or similar laws of other states or the federal government; except that convictions for violations by entities purchased or acquired by an applicant or permittee which occurred prior to the purchase or acquisition shall not be included, or who has offered, in person or through an agent, any inducement, including any discussion of potential employment opportunities, to any employee of the department when such person has an application for a permit pending or a permit under review. A license or permit shall not be issued to any person who has been adjudged in contempt of any court order enforcing the provisions of the Missouri solid or hazardous waste laws. For the purposes of this subsection, the term "person" shall include any officer or management employee of the applicant, or any officer or management employee of any corporation or business which owns an interest in the applicant, or any officer or management employee of any business which is owned either wholly or in part by any person, corporation, or business which owns an interest in the applicant.

(L. 1988 S.B. 535, A.L. 1995 S.B. 60 & 112)

*Word "of" appears here in original rolls.

Fly ash produced by coal combustion, exemption from solid waste permitting requirements, conditions--certain counties.

260.242. All fly ash produced by coal combustion generating facilities shall be exempt from all solid waste permitting requirements of this chapter, if such ash is constructively reused or disposed of by a grout technique in any active or inactive noncoal, non-open-pit mining operation located in a city having a population of at least three hundred fifty thousand located in more than one county and is also located in a county of the first class without a charter form of government with a population of greater than one hundred fifty thousand and less than one hundred sixty thousand, provided said ash is not considered hazardous waste under the Missouri hazardous waste law.

(L. 1993 S.B. 80, et al. § 15)

Buffer zone required, commercial processing facility, how determined.

260.243. The department of natural resources shall not issue a permit to an applicant for a commercial solid waste processing facility designed to incinerate solid waste in any county unless such facility meets the conditions established in this section. For the purposes of this section, a commercial solid waste processing facility is a facility designed to incinerate waste which accepts solid waste for a fee regardless of where such waste is generated. Any commercial solid waste processing facility which incinerates solid waste shall be located so as to provide a health and safety buffer zone to protect citizens living or working nearby. The size of the buffer zone shall be determined by the department but shall extend at least fifty feet from a facility located in a nonresidential area in a city not within a county or at least three hundred feet from a facility located elsewhere. The department shall consider the proximity of schools, businesses and houses, the prevailing winds and other factors which it deems relevant when establishing the buffer zone. Any facility located within a city not within a county shall be required to strictly adhere to the terms, conditions and provisions of its permit.

(L. 1990 S.B. 530, A.L. 1993 S.B. 80, et al.)

Tax, how levied--limitation--form of ballot.

260.245. 1. A city or county or combination of cities and counties may levy an annual tax as provided in sections 260.200 to 260.245 only after such tax has been submitted to a vote of the people to be affected thereby and a majority of the voters in each city or county voting thereon have approved same.

2. The question shall be submitted in substantially the following form:
Shall (the city of, the county of, the city of, and county of) levy an annual tax not to exceed ten cents on the one hundred dollars assessed valuation to pay for a solid waste management system?

(L. 1972 S.B. 387 § 10, A.L. 1978 H.B. 971)

Annexation or expansion of solid waste services by city, notice to certain private entities, when--city to contract with private entity, duration, terms.

260.247. 1. Any city which annexes an area or enters into or expands solid waste collection services into an area where the collection of solid waste is presently being provided by one or more private entities shall notify the private entity or entities of its intent to provide solid waste collection services in the area by certified mail.

2. A city shall not commence solid waste collection in such area for at least two years from the effective date of the annexation or at least two years from the effective date of the notice that the city intends to enter into the business of solid waste collection or to expand existing solid waste collection services into the area, unless the city contracts with the private entity or entities to continue such services for that period.

3. If the services to be provided under a contract with the city pursuant to subsection 2 of this section are substantially the same as the services rendered in the area prior to the decision of the city to annex the area or to enter into or expand its solid waste collection services into the area, the amount paid by the city shall be at least equal to the amount the private entity or entities would have received for providing such services during that period.

4. Any private entity or entities which provide collection service in the area which the city has decided to annex or enter into or expand its solid waste collection services into shall make available upon written request by the city not later than thirty days following such request, all information in its possession or control which pertains to its activity in the area necessary for the city to determine the nature and scope of the potential contract.

5. The provisions of this section shall apply to private entities that service fifty or more residential accounts or fifteen or more commercial accounts in the area in question.

(L. 1988 H.B. 1207 § 1)

Administrative penalties--not to be assessed for minor violation, definition--amount set by rule, payment when--appeal effect--surcharge due when--unpaid penalty, collection--time limitation to assess violation--judicial appeal--civil action effect, exception.

260.249. 1. In addition to any other remedy provided by law, upon a determination by the director that a provision of sections 260.200 to 260.281, or a standard, limitation, order, rule or regulation promulgated pursuant thereto, or a term or condition of any permit has been violated, the director may issue an order assessing an administrative penalty upon the violator under this section. An administrative penalty shall not be imposed until the director has sought to resolve the violations through conference, conciliation and persuasion and shall not be imposed for minor violations of sections 260.200 to 260.281 or minor violation of any standard, limitation, order, rule or regulation promulgated pursuant to sections 260.200 to 260.281 or minor violations of any term or condition of a permit issued pursuant to sections 260.200 to 260.281 or any violations of sections 260.200 to 260.281 by any person resulting from mismanagement of solid waste generated and managed on the property of the place of residence of the person. If the violation is resolved through conference, conciliation and persuasion, no administrative penalty shall be assessed unless the violation has caused, or has the potential to cause, a risk to human health or to the environment, or has caused or has potential to cause pollution, or was knowingly committed, or is defined by the United States Environmental Protection Agency as other than minor. Any order assessing an administrative penalty shall state that an administrative penalty is being assessed under this section and that the person subject to the penalty may appeal as provided by section 260.235. Any such order that fails to state the statute under which the penalty is being sought, the manner of collection or rights of appeal shall result in the state's waiving any right to collection of the penalty.

2. The department shall promulgate rules and regulations for the assessment of administrative penalties. The amount of the administrative penalty assessed per day of violation for each violation under this section shall not exceed the amount of the civil penalty specified in section 260.230. Such rules shall reflect the criteria used for the administrative penalty matrix as provided for in the Resource Conservation and Recovery Act, 42 U.S.C. 6928(a), Section

3008(a), and the harm or potential harm which the violation causes, or may cause, the violator's previous compliance record, and any other factors which the department may reasonably deem relevant. An administrative penalty shall be paid within sixty days from the date of issuance of the order assessing the penalty. Any person subject to an administrative penalty may appeal as provided in section 260.235. Any appeal will stay the due date of such administrative penalty until the appeal is resolved. Any person who fails to pay an administrative penalty by the final due date shall be liable to the state for a surcharge of fifteen percent of the penalty plus ten percent per annum on any amounts owed. Any administrative penalty paid pursuant to this section shall be handled in accordance with section 7 of article IX of the state constitution. An action may be brought in the appropriate circuit court to collect any unpaid administrative penalty, and for attorney's fees and costs incurred directly in the collection thereof.

3. An administrative penalty shall not be increased in those instances where department action, or failure to act, has caused a continuation of the violation that was a basis for the penalty. Any administrative penalty must be assessed within two years following the department's initial discovery of such alleged violation, or from the date the department in the exercise of ordinary diligence should have discovered such alleged violation.

4. The state may elect to assess an administrative penalty, or, in lieu thereof, to request that the attorney general or prosecutor file an appropriate legal action seeking a civil penalty in the appropriate circuit court.

5. Any final order imposing an administrative penalty is subject to judicial review upon the filing of a petition pursuant to section 536.100, RSMo, by any person subject to the administrative penalty.

(L. 1991 S.B. 45, A.L. 1992 H.B. 1732, A.L. 1993 S.B. 80, et al.)

Major appliances, waste oil, yard waste and batteries, disposal restricted--recycling of certain items, addressed in solid waste management plan.

260.250. 1. After January 1, 1991, major appliances, waste oil and lead-acid batteries shall not be disposed of in a solid waste disposal area. After January 1, 1992, yard waste shall not be disposed of in a solid waste disposal area.

2. After January 1, 1991, waste oil shall not be incinerated without energy recovery.

3. Each district, county and city shall address the recycling, reuse and handling of aluminum containers, glass containers, newspapers, whole tires, plastic beverage containers and steel containers in its solid waste management plan consistent with sections 260.250 to 260.345.

(L. 1990 S.B. 530)

Department to provide technical assistance and public education programs on collection of used motor oil--household consumer used motor oil, duty to maintain toll-free telephone for information.

260.253. Funds may be allocated, upon appropriation, to the department to provide technical assistance to local governments and conduct public education programs concerning the proper handling of used motor oil. The department shall establish and maintain a telephone number,

which may be toll free, for the purpose of disseminating information concerning the locations and operation of household consumer-used motor oil collection centers within the state, as well as information concerning the availability, dates and requirements for curbside collection where available. The department shall also develop a durable and legible sign, suitable for use by a retailer of motor oil informing the public of the importance of proper collection, recycling or disposal of used motor oil and the telephone number for used motor oil information.

(L. 1995 S.B. 60 & 112 § 260.253 subsec. 1)

Grants for household consumer-used motor oil collection systems, requirements--centers not to accept motor oil from commercial operation.

260.254. 1. The department may award grants to solid waste management districts, municipalities, counties, and other local government entities or their instrumentalities to plan, establish or promote household consumer-used motor oil collection systems. In order to be eligible for grants, household consumer-used motor oil collection centers may only accept used motor oil originating from household consumers or farmers, and must operate in compliance with department rules. Household consumer-used motor oil collection centers may not accept used motor oil from commercial operations. Household consumer-used motor oil collection centers may limit the quantity of oil received at any one time from an individual and may restrict the size of the container used to deliver the oil to the center.

2. All household consumer-used motor oil collection centers must comply with the recycled used oil management standards as established by the department.

3. Household consumer-used motor oil collection centers shall transfer used motor oil only to transporters licensed pursuant to rules of the department.

4. All used motor oil recycling, reclaiming, and rerefining facilities shall comply with all applicable requirements of the department.

5. The department shall establish rules to carry out the provisions of this section and section 260.253.

(L. 1995 S.B. 60 & 112 § 260.253 subsecs. 2 to 6)

Newspapers, duty to recycle, requirements--statement to be filed with department, penalty.

260.255. 1. After January 1, 1994, each newspaper publisher in this state with an average daily distribution on days published of more than fifteen thousand copies shall file a statement with the department of natural resources certifying the total number of tons of newsprint used during the past calendar year, and the average recycled content of such newsprint. The statement shall declare whether the following target percentages have been met for the past year, and if not met, shall contain a statement explaining why the newspaper publisher failed to meet the target percentages.

2. The target recycled content usage for each newspaper publisher for each year shall be:

- (1) 1993, ten percent;
- (2) 1994, twenty percent;
- (3) 1995, thirty percent;

- (4) 1996, forty percent;
- (5) 2000, and subsequent years, fifty percent.

3. Any newspaper publisher who fails to file a statement with or seek a waiver from the department, or who files a statement containing misleading or deceptive information, shall be a violation of this section, punishable by a civil fine of not more than one hundred dollars per day for each day the violation continues. Penalties imposed under this section shall be deposited into the solid waste management fund and shall be used to further the purposes of sections 260.200 to 260.345.

(L. 1990 S.B. 530)

Batteries, lead-acid, disposal of restricted--penalty.

260.260. 1. Effective January 1, 1991, no person shall knowingly place a used lead-acid battery in a solid waste disposal area, discard or otherwise dispose of a lead-acid battery.

2. Such batteries shall be delivered to a recycling or resource recovery facility permitted by this or another state or to the agent of a battery wholesaler or manufacturer for delivery to a permitted secondary lead smelter.

3. Each lead-acid battery improperly disposed of shall constitute a separate violation. A person who disposes of a lead-acid battery in violation of this section shall, upon conviction, be guilty of a class C misdemeanor.

(L. 1990 S.B. 530, A.L. 1995 H.B. 81)

Retailers of lead-acid batteries, duties--notice to purchaser, contents.

260.262. A person selling lead-acid batteries at retail or offering lead-acid batteries for retail sale in the state shall:

(1) Accept, at the point of transfer, in a quantity at least equal to the number of new lead-acid batteries purchased, used lead-acid batteries from customers, if offered by customers;

(2) Post written notice which must be at least four inches by six inches in size and must contain the universal recycling symbol and the following language:

(a) It is illegal to discard a motor vehicle battery or other lead- acid battery;

(b) Recycle your used batteries; and

(c) State law requires us to accept used motor vehicle batteries, or other lead-acid batteries for recycling, in exchange for new batteries purchased; and

(3) Manage used lead-acid batteries in a manner consistent with the requirements of the state hazardous waste law.

(L. 1990 S.B. 530, A.L. 1995 H.B. 81)

Notices to public, batteries, duties of department.

260.264. The department of natural resources shall produce, print and distribute the notices required by section 260.262 to all places where lead-acid batteries are offered for sale at retail. In performing its duties under this section, the department may inspect any place, building or

premises governed by sections 260.260 to 260.266. The department may enter into an interagency agreement with the superintendent of the highway patrol to authorize the superintendent to conduct inspections at motor vehicle safety inspection stations in conjunction with inspections undertaken pursuant to sections 307.350 to 307.400, RSMo. Authorized employees of the agency or of the superintendent may issue warnings and citations to persons who fail to comply with the requirements of those sections. Failure to post the required notice following warning shall be an infraction.

(L. 1990 S.B. 530)

Wholesalers of lead-acid batteries, duties--storage of batteries, requirements.

260.266. 1. Any person selling new lead-acid batteries at wholesale shall accept, at the point of transfer, in a quantity at least equal to the number of new lead-acid batteries purchased, used lead-acid batteries from customers, if offered by customers. A person accepting lead-acid batteries in transfer from an automotive battery retailer shall be allowed a period not to exceed ninety days to remove lead-acid batteries from the retail point of collection.

2. Lead-acid battery retailers and wholesalers shall not hold used lead-acid batteries for more than ninety days without the approval of the department and shall store used lead-acid batteries in a manner which will protect human health and the environment pursuant to regulations adopted by the department of natural resources under this chapter.

(L. 1990 S.B. 530, A.L. 1995 H.B. 81)

Restriction on sales of certain batteries, effective dates--sale of nonbutton cell mercuric-oxide battery requirements, duties of manufacturer, violation, penalty.

260.267. 1. No person shall sell, offer for sale, or offer for promotional purposes any alkaline-manganese battery manufactured on or after January 1, 1997, with any mercury content that was intentionally introduced, as distinguished from mercury that may be incidentally present in other materials, except that the limitation on mercury content in alkaline-manganese button cell batteries shall be twenty-five milligrams of mercury per button cell.

2. (1) No person shall sell, offer for sale, or offer for promotional purposes for use in Missouri any button cell mercuric-oxide battery on or after January 1, 1996.

(2) No person shall sell, offer for sale, or offer for promotional purposes for use in Missouri any nonbutton cell mercuric-oxide battery on or after January 1, 1996, unless the battery manufacturer does all of the following:

(a) Identifies an approved collection site to which persons may send used mercuric-oxide batteries for recycling or proper disposal;

(b) Informs each mercuric-oxide battery purchaser of the location of the collection site identified in paragraph (a) of this subdivision; and

(c) Informs each mercuric-oxide battery purchaser of a telephone number that the purchaser may call to receive information about returning used mercuric-oxide batteries for recycling or proper disposal.

3. A person in violation of this section shall, upon conviction, be guilty of a class C misdemeanor.

(L. 1995 H.B. 81)

Waste tires, prohibited activities--penalties--site owners, no new waste tire sites permitted, when, exception--registration required, duty to inform department, contents--rules and regulations--permit fees--duties of department--inventory of processed waste tires not to exceed limitation--auto dismantler, limited storage of tires allowed--recovered rubber, use by transportation department, how.

260.270. 1. (1) It shall be unlawful for any person to haul for commercial profit, collect, process, or dispose of waste tires in the state except as provided in this section. This section shall not be construed to prohibit waste tires from being hauled to a lawfully operated facility in another state. Waste tires shall be collected at a waste tire site, waste tire processing facility, waste tire end-user facility, or a waste tire collection center. A violation of this subdivision shall be a class C misdemeanor for the first violation. A second and each subsequent violation shall be a class A misdemeanor. A third and each subsequent violation, in addition to other penalties authorized by law, may be punishable by a fine not to exceed five thousand dollars and restitution may be ordered by the court.

(2) A person shall not maintain a waste tire site unless the site is permitted by the department of natural resources for the proper and temporary storage of waste tires or the site is an integral part of the person's permitted waste tire processing facility or registered waste tire end-user facility. No new waste tire sites shall be permitted by the department after August 28, 1997, unless they are located at permitted waste tire processing facilities or registered waste tire end-user facilities. A person who maintained a waste tire site on or before August 28, 1997, shall not accept any quantity of additional waste tires at such site after August 28, 1997, unless the site is an integral part of the person's waste tire processing or end-user facility, or unless the person who maintains such site can verify that a quantity of waste tires at least equal to the number of additional waste tires received was shipped to a waste tire processing or end-user facility within thirty days after receipt of such additional waste tires.

(3) A person shall not operate a waste tire processing facility unless the facility is permitted by the department. A person shall not maintain a waste tire end-user facility unless the facility is registered by the department. The inventory of unprocessed waste tires on the premises of a waste tire processing or end-user facility shall not exceed the estimated inventory that can be processed or used in six months of normal and continuous operation. This estimate shall be based on the volume of tires processed or used by the facility in the last year or the manufacturer's estimated capacity of the processing or end-user equipment. This estimate may be increased from time to time when new equipment is obtained by the owner of the facility, and shall be reduced if equipment used previously is removed from active use. The inventory of processed waste tires on the

premises of a waste tire processing or end-user facility shall not exceed two times the permitted inventory of an equivalent volume of unprocessed waste tires.

(4) Any person selling new, used, or remanufactured tires at retail shall accept, at the point of transfer, in a quantity equal to the number of tires sold, waste tires from customers, if offered by such customers. Any person accepting waste tires may charge a reasonable fee reflecting the cost of proper management of any waste tires accepted; except that the fee shall not exceed two dollars per waste tire for any tire designed for a wheel of a diameter of sixteen inches or less and which tire is required to be accepted on a one-for-one basis at the time of a retail sale pursuant to this subdivision. All tire retailers or other businesses that generate waste tires shall use a waste tire hauler permitted by the department, except that businesses that generate or accept waste tires in the normal course of business may haul such waste tires without a permit, if such hauling is performed without any consideration and such business maintains records on the waste tires hauled as required by sections 260.270 to 260.276. Retailers shall not be liable for illegal disposal of waste tires after such waste tires are delivered to a waste tire hauler, waste tire collection center, waste tire site, waste tire processing facility or waste tire end-user facility if such entity is permitted by the department of natural resources.

(5) It shall be unlawful for any person to transport waste tires for consideration within the state without a permit.

(6) Waste tires may not be deposited in a landfill unless the tires have been cut, chipped or shredded.

2. Within six months after August 28, 1990, owners and operators of any waste tire site shall provide the department of natural resources with information concerning the site's location, size, and approximate number of waste tires that have been accumulated at the site and shall initiate steps to comply with sections 260.270 to 260.276.

3. The department of natural resources shall promulgate rules and regulations pertaining to collection, storage and processing and transportation of waste tires and such rules and regulations shall include:

(1) Methods of collection, storage and processing of waste tires. Such methods shall consider the general location of waste tires being stored with regard to property boundaries and buildings, pest control, accessibility by fire-fighting equipment, and other considerations as they relate to public health and safety;

(2) Procedures for permit application and permit fees for waste tire sites and commercial waste tire haulers, and by January 1, 1996, procedures for permitting of waste tire processing facilities and registration of waste tire end-user facilities. The only purpose of such registration shall be to provide information for the documentation of waste tire handling as described in subdivision (5) of this subsection, and registration shall not impose any additional requirements on the owner of a waste tire end-user facility;

(3) Requirements for performance bonds or other forms of financial assurance for waste tire sites;

(4) Exemptions from the requirements of sections 260.270 to 260.276; and

(5) By January 1, 1996, requirements for record-keeping procedures for retailers and other businesses that generate waste tires, waste tire haulers, waste tire collection centers, waste tire sites, waste tire processing facilities, and waste tire end-user facilities.

Required record keeping shall include the source and number or weight of tires received and the destination and number of tires or weight of tires or tire pieces shipped or otherwise disposed of and such records shall be maintained for at least three years following the end of the calendar year of such activity. Detailed record keeping shall not be required where any charitable, fraternal, or other nonprofit organization conducts a program which results in the voluntary cleanup of land or water resources or the turning in of waste tires.

4. Permit fees for waste tire sites and commercial waste tire haulers shall be established by rule and shall not exceed the cost of administering sections 260.270 to 260.275. Permit fees shall be deposited into an appropriate subaccount of the solid waste management fund.

5. The department shall:

(1) Encourage the voluntary establishment of waste tire collection centers at retail tire selling businesses and waste tire processing facilities; and

(2) Investigate, locate and document existing sites where tires have been or currently are being accumulated, and initiate efforts to bring these sites into compliance with rules and regulations promulgated pursuant to the provisions of sections 260.270 to 260.276.

6. Any person licensed as an auto dismantler and salvage dealer under chapter 301, RSMo, may without further license, permit or payment of fee, store but shall not bury on his property, up to five hundred waste tires that have been chipped, cut or shredded, if such tires are only from vehicles acquired by him, and such tires are stored in accordance with the rules and regulations adopted by the department pursuant to this section. Any tire retailer or wholesaler may hold more than five hundred waste tires for a period not to exceed thirty days without being permitted as a waste tire site, if such tires are stored in a manner which protects human health and the environment pursuant to regulations adopted by the department.

7. Notwithstanding any other provisions of sections 260.270 to 260.276, a person who leases or owns real property may use waste tires for soil erosion abatement and drainage purposes in accordance with procedures approved by the department, or to secure covers over silage, hay, straw or agricultural products.

8. The department of transportation shall, beginning July 1, 1991, undertake, as part of its currently scheduled highway improvement projects, demonstration projects using recovered rubber from waste tires as surfacing material, structural material, subbase material and fill, consistent with standard engineering practices. The department shall evaluate the efficacy of using recovered rubber in highway improvements, and shall encourage the modification of road construction specifications, when possible, for the use of recovered rubber in highway improvement projects.

9. The director may request a prosecuting attorney to institute a prosecution for any violation of this section. In addition, the prosecutor of any county or circuit attorney of any city not within a county may, by information or indictment, institute a prosecution for any violation of this section.

(L. 1990 S.B. 530, A.L. 1995 S.B. 60 & 112, A.L. 2002 S.B. 1011)

Waste tires and rubber chips may be used as landfill cover, department of natural resources to promulgate rules.

260.272. Processed waste tires and recycled rubber chips may be used in the design and operation of sanitary landfills, including use of such tires and rubber chips as daily cover. The department of natural resources may promulgate rules to implement this section. Any rule or portion of a rule, as that term is defined in section 536.010, RSMo, that is created under the authority delegated in this section shall become effective only if it complies with and is subject to all of the provisions of chapter 536, RSMo, and, if applicable, section 536.028, RSMo. This section and chapter 536, RSMo, are nonseverable and if any of the powers vested with the general assembly pursuant to chapter 536, RSMo, to review, to delay the effective date or to disapprove and annul a rule are subsequently held unconstitutional, then the grant of rulemaking authority and any rule proposed or adopted after August 28, 1999, shall be invalid and void.

(L. 1999 H.B. 603, et al. § 1)

Fee, sale of new tires, amount--collection, use of moneys --termination.

260.273. 1. Any person purchasing a new tire may present to the seller the used tire or remains of such used tire for which the new tire purchased is to replace.

2. A fee for each new tire sold at retail shall be imposed on any person engaging in the business of making retail sales of new tires within this state. The fee shall be charged by the retailer to the person who purchases a tire for use and not for resale. Such fee shall be imposed at the rate of fifty cents for each new tire sold. Such fee shall be added to the total cost to the purchaser at retail after all applicable sales taxes on the tires have been computed. The fee imposed, less six percent of fees collected, which shall be retained by the tire retailer as collection costs, shall be paid to the department of revenue in the form and manner required by the department of revenue and shall include the total number of new tires sold during the preceding month. The department of revenue shall promulgate rules and regulations necessary to administer the fee collection and enforcement. The terms "sold at retail" and "retail sales" do not include the sale of new tires to a person solely for the purpose of resale, if the subsequent retail sale in this state is to the ultimate consumer and is subject to the fee.

3. The department of revenue shall administer, collect and enforce the fee authorized pursuant to this section pursuant to the same procedures used in the administration, collection and enforcement of the general state sales and use tax imposed pursuant to chapter 144, RSMo, except as provided in this section. The proceeds of the new tire fee, less four percent of the proceeds, which shall be retained by the department of revenue as collection costs, shall be transferred by the department of revenue into an appropriate subaccount of the solid waste management fund, created pursuant to section 260.330.

4. Up to five percent of the revenue available may be allocated, upon appropriation, to the department of natural resources to be used cooperatively with the department of elementary and secondary education for the purposes of developing educational programs and curriculum pursuant to section 260.342.

5. Up to twenty-five percent of the moneys received pursuant to this section may, upon appropriation, be used to administer the programs imposed by this section. Up to five percent of the moneys received under this section may, upon appropriation, be used for the grants authorized in subdivision (2) of subsection 6 of this section and authorized in section 260.274.

All remaining moneys shall be allocated, upon appropriation, for the projects authorized in section 260.276.

6. The department shall promulgate, by rule, a statewide plan for the use of moneys received pursuant to this section to accomplish the following:

- (1) Removal of waste tires from illegal tire dumps;
- (2) Providing grants to persons that will use products derived from waste tires, or used waste tires as a fuel or fuel supplement; and
- (3) Resource recovery activities conducted by the department pursuant to section 260.276.

*7. The fee imposed in subsection 2 of this section shall terminate January 1, 2004.

(L. 1990 S.B. 530, A.L. 1995 S.B. 60 & 112, A.L. 1999 H.B. 603, et al. merged with S.B. 426)

*The imposed fee terminates 1-1-04.

Grants, use of waste tires as fuel, who may apply--limitations--advisory council, duties.

260.274. 1. The department and the environmental improvement and energy resources authority shall administer a program to provide incentive grants for capital expenditures to convert existing facilities for the purpose of using waste tires as a fuel or fuel supplement or products from waste tires. Any person, other than a state agency, who meets eligibility requirements established by the department by rule may apply for such grants. No grant may be awarded for an activity which receives less than forty percent of its tires from Missouri waste tire sites, retailers or residents. The burden of proof shall be on the applicant to show that eligibility requirements have been met.

2. For the purpose of establishing eligibility requirements and application priorities, the director shall create an advisory council consisting of members of the tire industry, the general public, the department, and the department of economic development.

(L. 1990 S.B. 530, A.L. 1995 S.B. 60 & 112)

Waste tire site, closure plan, contents--financial assurance instrument, purpose, how calculated.

260.275. 1. Each operator of a waste tire site shall ensure that the area is properly closed upon cessation of operations. The department of natural resources may require that a closure plan be submitted with the application for a permit. The closure plan, as approved by the department, shall include at least the following:

- (1) A description of how and when the area will be closed;
- (2) The method of final disposition of any waste tires remaining on the site at the time notice of closure is given to the department.

2. The operator shall notify the department at least ninety days prior to the date he expects closure to begin. No waste tires may be received by the waste tire site after the date closure is to begin.

3. The permittee shall provide a financial assurance instrument in such an amount and form as prescribed by the department to ensure that, upon abandonment, cessation or interruption of the operation of the site, an approved closure plan is completed. The amount of the financial assurance instrument shall be based upon the current costs of similar cleanups using data from actual waste tire cleanup project bids received by the department to remediate waste tire sites of similar size. If waste tires are accumulated at a solid waste management area, the existing financial assurance instrument filed for the solid waste disposal area may be applied to the requirements of this section. Any interest that accrues to any financial assurance instrument established pursuant to this section shall remain with that instrument and shall be applied against the operator's obligation under this section until the instrument is released by the department. The director shall authorize the release of the financial assurance instrument after the department has been notified by the operator that the site has been closed, and after inspection, the department approves closure of the waste tire site.

4. If the operator of a waste tire site fails to properly implement the closure plan, the director shall order the operator to implement such plan, and take other steps necessary to assure the proper closure of the site pursuant to section 260.228 and this section.

(L. 1990 S.B. 530, A.L. 1995 S.B. 60 & 112)

Nuisance abatement activities, department may conduct--costs, civil action authorized, exception--resource recovery or nuisance abatement bids on contract, who may bid--content.

260.276. 1. The department of natural resources shall, subject to appropriation, conduct resource recovery or nuisance abatement activities designed to reduce the volume of waste tires or alleviate any nuisance condition at any site if the owner or operator of such a site fails to comply with the rules and regulations authorized under section 260.270, or if the site is in continued violation of such rules and regulations. The department shall give first priority to cleanup of sites owned by persons who present satisfactory evidence that such persons were not responsible for the creation of the nuisance conditions or any violations of section 260.270 at the site.

2. The department may ask the attorney general to initiate a civil action to recover from any persons responsible the reasonable and necessary costs incurred by the department for its nuisance abatement activities and its legal expenses related to the abatement; except that in no case shall the attorney general seek to recover cleanup costs from the owner of the property if such person presents satisfactory evidence that such person was not responsible for the creation of the nuisance condition or any violation of section 260.270 at the site.

3. The department shall allow any person, firm, corporation, state agency, charitable, fraternal, or other nonprofit organization to bid on a contract for each resource recovery or nuisance abatement activity authorized under this section. The contract shall specify the cost per tire for delivery to a registered waste tire processing or end-user facility, and the cost per tire for processing. The recipient or recipients of any contract shall not be compensated by the department for the cost of delivery and the cost of processing for each tire until such tire is delivered to a registered waste tire processing or end-user facility and the contract recipient has provided proof of delivery to the department. Any charitable, fraternal, or other nonprofit

organization which voluntarily cleans up land or water resources may turn in waste tires collected in the course of such cleanup under the rules and regulations of the department.

(L. 1990 S.B. 530, A.L. 1995 S.B. 60 & 112)

Performance bond or letter of credit required for transporter of waste tires, when--provisions required--forfeiture of bond, when, procedure--bond requirement ceases, when.

260.278. 1. A person who has, within the preceding twenty-four months, been found guilty or pleaded guilty to a violation of section 260.270 which involves the transport of waste tires may not be granted a permit to transport waste tires unless the person seeking the permit has provided to the department a performance bond or letter of credit as provided under this section.

2. The bond or letter shall be conditioned upon faithful compliance with the terms and conditions of the permit and section 260.270 and shall be in the amount of ten thousand dollars.

3. Such performance bond, placed on file with the department, shall be in one of the following forms:

(1) A performance bond, payable to the department and issued by an institution authorized to issue such bonds in this state; or

(2) An irrevocable letter of credit issued in favor of and payable to the department from a commercial bank or savings and loan having an office in the state of Missouri.

4. Upon a determination by the department that a person has violated the terms and conditions of the permit or section 260.270, the department shall notify the person that the bond or letter of credit shall be forfeited and the moneys placed in an appropriate subaccount of the solid waste management fund, created under section 260.330, for remedial action.

5. The department shall expend whatever portion of the bond or letter of credit necessary to conduct resource recovery or nuisance abatement activities to alleviate any condition resulting from a violation of section 260.270 or the terms and conditions of a permit.

6. The requirement for a person to provide a performance bond or a letter of credit under this section shall cease for that person after two consecutive years in which the person has not been found guilty or pleaded guilty to a violation of section 260.270.

(L. 1995 S.B. 60 & 112)

Container defined--plastic ring or holding device must be biodegradable within two years--acceptable rings or holding device, department to furnish list--violations, penalty--effective when.

260.280. 1. As used in this section and section 260.281, the term "container" means any glass, metal or plastic bottle, can, jar or other receptacle for holding liquid, powder or other material, which has been sealed by a manufacturer and which, at the time of sale, contains less than one gallon of such liquid, powder or other material.

2. Beginning January 1, 1991, no person may sell or offer for sale in this state containers connected to each other by a separate holding device constructed of plastic rings or other plastic

holding device, unless such device decomposes by photodegradation, chemical degradation or biodegradation within a two-year period of time upon exposure to the elements. The department of natural resources shall determine which plastic holding devices satisfy the requirements of this section and shall furnish a list of acceptable types of plastic holding devices to any person upon the request of such person.

3. A retail or wholesale business violating this section shall be subject to a fine not to exceed one thousand dollars for a first offense, five thousand dollars for a second offense, and ten thousand dollars for a third and each subsequent offense. If the violation is of a continuing nature, each day of the violation shall constitute an additional, separate, and distinct offense.

(L. 1989 H.B. 438, et al. § 3)

Effective 1-1-91

Plastic, plastic bottles or rigid plastic container defined --containers, must have coded label, content, form--exempt products, rules established by department--violations, penalty.

260.281. 1. As used in this section, the following terms mean:

(1) "Label", a molded imprint or raised symbol on or near the bottom of a plastic product;

(2) "Person", an individual, sole proprietor, partnership, association, corporation or other legal entity;

(3) "Plastic", any material made of polymeric organic compounds and additives that can be shaped by flow;

(4) "Plastic bottle", a plastic container that has a neck that is smaller than the body of the container, accepts a screwtype, snap cap or other closure and has a capacity of sixteen fluid ounces or more, but less than five gallons;

(5) "Rigid plastic container", any formed or molded container, other than a bottle, intended for single use, composed predominantly of plastic resin, and having a relatively inflexible finite shape or form with a capacity of eight ounces or more but less than five gallons.

2. Beginning January 1, 1992, no retail or wholesale business shall distribute, sell or offer for sale in this state any plastic bottle or rigid plastic container or any product in such a bottle or container unless the product bottle or container is labeled with a code indicating the plastic resin used to produce the bottle or container. Rigid plastic bottles or rigid plastic containers with labels and basecups of a different material shall be coded by their basic material. The code shall consist of a number placed within a triangle of arrows and letters placed below the triangle of arrows. The triangle shall be equilateral, formed by three arrows with the apex of each point of the triangle at the midpoint of each arrow, rounded with a short radius. The arrowhead of each arrow shall be at the midpoint of each side of the triangle with a short gap separating the pointer from the base of the adjacent arrow. The triangle, formed by the three arrows curved at their midpoints shall depict a clockwise path around the code number. The numbers and letters used shall be as follows:

(1) "1" - PETE (polyethylene terephthalate);

(2) "2" - HDPE (high density polyethylene);

- (3) "3" - V (vinyl);
- (4) "4" - LDPE (low density polyethylene);
- (5) "5" - PP (polypropylene);
- (6) "6" - PS (polystyrene);
- (7) "7" - OTHER (includes multi-layer).

3. The department of natural resources shall determine through rules and regulations which plastic containers may be exempt from the labeling requirements including, but not limited to:

- (1) Readily identifiable plastic containers;
- (2) Plastic containers for which there is no technological capability for recycling, reclamation or reuse;
- (3) Plastic containers for which recycling, reclamation or reuse is not economically feasible; and
- (4) Plastic containers of a capacity less than a specified minimum size as determined by the department of agriculture.

4. The department may by rule modify the codes established in this section and may create additional codes to reflect technological changes in the production, marketing and recycling of plastic containers.

5. Any person who violates subsection 2 of this section shall be guilty of a class A misdemeanor. Each day of violation constitutes a separate offense.

(L. 1989 H.B. 438, et al. § 4, A.L. 1990 S.B. 530)

Effective 1-1-92

Manufacturer recycling flexible cellulose casing eligible for tax credit--claim procedure--fraudulent claim, penalty.

260.285. 1. Any manufacturer engaged in this state in production of a meat or poultry food product intended for human consumption that is recycling flexible cellulose casing manufactured from cotton linters used and consumed directly in the production of such food product shall be eligible for a credit as defined in subsection 2 of this section. For purposes of this section, "cotton linters" means fibers from any plant or wood pulp material used for the creation of flexible cellulose casings.

2. The credit authorized in subsection 1 shall be equal to the amount of state sales or use taxes paid by a manufacturer to a retailer on such packaging material which is subsequently recycled by either the manufacturer or other person or entity to which the manufacturer conveys such packaging materials, less any consideration received by the manufacturer for such conveyance.

3. A manufacturer shall claim the refund in the month following the month in which the material has been recycled or conveyed for recycling. When claiming a credit pursuant to this section, a manufacturer shall provide a detailed accounting of the amount of packaging material recycled, amount of sales or use tax paid on such material, an affidavit attesting that the manufacturer is eligible pursuant to the provisions of this section for the credit being claimed, documentation that the activity constitutes recycling as certified by the director of the department of natural resources and any other documentation determined necessary by the director of the

department of revenue. The director shall refund any valid credit claims within sixty days of receipt. If the director determines that a fraudulent claim for the credit has been filed, the director may assess a penalty in an amount not to exceed twice the amount of fraudulent credits claimed.

4. Payment of credits authorized by this section shall not alter the liability of a retailer regarding sales tax on such material. Credits authorized by this section shall be paid from funds appropriated for the refund of taxes.

(L. 1991 S.B. 87, A.L. 1998 S.B. 827 merged with S.B. 936, A.L. 2000 H.B. 1454)

Effective 6-27-00

Regions, division of state into--procedures, purpose.

260.300. 1. The department shall propose a plan to divide the state into proposed solid waste management regions in consultation with the governing bodies of the counties of the state. The department shall propose the boundaries of solid waste management regions by March 1, 1991.

2. The department shall hold public meetings in each of the regions proposed pursuant to subsection 1 of this section within three months of its division of the state into proposed regions. Any county may request that it be placed with another regional grouping, and the department shall authorize any such change if the county clearly and convincingly demonstrates that the change is necessary for effective solid waste management within the county and will not negatively affect the solid waste management system of either region. The department shall adopt final boundaries for the regions by June 30, 1991.

3. Counties may, for the purpose of managing districts, cooperate as provided in sections 260.300 to 260.345 or formulate an alternative management structure agreed to by each county in the district. A solid waste management district, regardless of how formed, shall be governed by an executive board and comply with the provisions of sections 260.200 to 260.345.

(L. 1990 S.B. 530)

County may apply for change in region, when, procedures.

260.302. On June 19, 1992, and for three months thereafter and for the last three months of the year 1994 and every third year thereafter, the governing body of a county may apply to the department to request that the county be placed with another regional grouping or, if necessary, in a new regional grouping. After public notice and comment and within no more than ninety days after the completed application has been submitted, the department shall authorize any such change if the county clearly and convincingly demonstrates that the change is necessary for effective solid waste management within the county and will not negatively affect the solid waste management system of either region. The procedure for establishing solid waste management regions set forth in section 260.300 shall take priority over and be followed in exclusion to the rulemaking procedure set forth in chapter 536, RSMo, and section 260.225.

(L. 1992 H.B. 1732)

Effective 6-19-92

Creation of district, procedures--boundaries, limitations--petition to establish--district a body corporate and politic, when--election.

260.305. 1. A solid waste management district may be created and incorporated in each solid waste management region as provided in sections 260.300* to 260.345 and may exercise the powers granted to it in sections 260.300 to 260.345.

2. When a solid waste management district is organized it shall be a body corporate of the state and shall be known as "..... Solid Waste Management District".

3. A county or two or more counties within a region may form or join a district as provided herein. The governing body of any county, by adoption of an ordinance or order, may join an existing district or form a district if the county is located in a region which does not have an existing district. The governing body of any two or more counties within the same region may join together to form a district by adoption of an ordinance or order. A city located in more than one county may join a district which encompasses any one of the counties within which it is located, regardless of whether the remaining counties containing the city join the district.

4. A solid waste management district created and organized under authority of sections 260.300 to 260.345 shall become a body corporate and politic of the state at the time the governing body of the county or counties forming the district has adopted an order or ordinance to form the district under the provisions of this section and has provided written notice to the department of natural resources of the adoption of such order or ordinance. A county shall become a part of an existing district at the time the governing body of such county has adopted an order or ordinance to join the district and has provided written notice to the governing body of each county in the existing district and has provided written notice to the department of natural resources.

5. If a county governing body does not form or join a district, the question of forming or joining a district may be submitted to the voters of any county on any regular election day as provided in section 115.123, RSMo. The question may be submitted or resubmitted to the voters of any county upon the submission of a petition signed by a number of voters which is at least equal to five percent of those voting in the most recent gubernatorial election. The question shall be submitted in substantially either of the following forms:

Shall (insert county name) become a member of the (insert name) solid waste management district?; or if a solid waste management district has not been formed within the region:

Shall (insert county name) form the (insert name) solid waste management district?

The election authority shall notify the secretary of state as to the results of the election. The secretary of state shall transmit the election results to the director of the department of natural resources who shall declare districts created within all counties of each region wherein the question received a majority of the votes cast. The director's declaration shall be transmitted to the governing body of each county within the district.

(L. 1990 S.B. 530, A.L. 1992 H.B. 1732)

*Section number "260.200" appears in original rolls, an apparent typographical error.

Contractual authority, powers.

260.310. 1. The authority of the district shall not extend to any county within the region which has not joined the district.

2. The district may enter into a contract with any city or county within the district to provide all or part of the solid waste management services for the city or county. A city or county shall not be required to meet the provisions of section 260.220 or of section 260.325 if a district includes the city or county within its solid waste plan and the city or county has by contract given the district complete authority for managing the solid waste of the city or county.

3. The district and the counties and cities within the district may enter into whatever contracts or agreements they deem necessary to fulfill their responsibilities under this chapter. Nothing in this section shall preclude the transfer of solid waste outside the boundaries of the district.

4. Contracts issued for the collection or disposal of solid waste in cities, counties, and districts shall not require either security instruments or performance bonds in excess of twenty percent of the total cost of the contract.

5. Any county or counties which are within a solid waste management district may, in cooperation with the district, require by ordinance or order that any solid waste transported from outside the district to a solid waste processing facility or solid waste disposal area within the district be subject to the same requirements as solid waste originating from within the district as set forth in the solid waste management plan under section 260.325, including the separation of recyclable or compostable materials from the solid waste stream before entering a district's solid waste management system.

6. A solid waste management district may be created and incorporated in each solid waste management region as provided in sections 260.200 to 260.345 and may exercise the powers granted to it in sections 260.200 to 260.345.

(L. 1990 S.B. 530)

Council, selection of members, terms--meetings--powers--selection of executive board, terms.

260.315. 1. There is hereby established a solid waste management council for each solid waste management district, except for those districts which formulate an alternative management structure pursuant to section 260.300. The governing body of each city with a population over five hundred within the district shall appoint one member of the city governing body and the governing body of each county within the district shall appoint two members of the county governing body to the council.

2. Council members shall serve a term of two years and may be reappointed thereafter; however, members whose elected term of office in a city or county has expired shall be expeditiously replaced by the governing bodies from whence they were selected.

3. The council shall meet within thirty days of the receipt of notification of formation of the district at the call of the governing body of the county containing the largest population among those counties approving the formation of the district or, at the call of the director of the department, if the county does not call the meeting. A majority of the council shall constitute a quorum.

4. The council shall:

(1) Organize itself and select a chairman and such other officers as it deems appropriate;

(2) Select seven persons to serve on the executive board, at least a majority of whom shall be selected from members of the council. The council shall establish the terms of office for members of the executive board. The balance shall be selected in any manner approved by the council, including district-wide elections. Any subsequent member of the board shall be selected in the same manner as the person he replaces. If the council is composed of twelve or fewer members, the council shall act as the executive board;

(3) Meet at least twice annually and upon the call of either the chairman of the council or the chairman of the executive board; and

(4) Review and act upon the solid waste management plan recommended by the executive board.

(L. 1990 S.B. 530)

Executive board, meetings, selection of officers--powers, duties --contractual authority.

260.320. 1. The executive board shall meet within thirty days after the selection of the initial members. The time and place of the first meeting of the board shall be designated by the council. A majority of the members of the board shall constitute a quorum. At its first meeting the board shall elect a chairman from its members and select a secretary, treasurer and such officers or employees as it deems expedient or necessary for the accomplishment of its purposes. The secretary and treasurer need not be members of the board.

2. The executive board may adopt, alter or repeal its own bylaws, rules and regulations governing the manner in which its business may be transacted, including procedures for the replacement of persons who habitually fail to attend board meetings, and may establish its fiscal year, adopt an official seal, apply for and accept grants, gifts or appropriations from any public or private sector, make all expenditures which are incidental and necessary to carry out its purposes and powers, and take such action, enter into such agreements and exercise all other powers and functions necessary or appropriate to carry out the duties and purposes of sections 260.200 to 260.345.

3. The executive board shall:

(1) Review and comment upon applications for permits submitted pursuant to section 260.205, for solid waste processing facilities and solid waste disposal areas which are to be located within the region or, if located in an adjacent region, which will impact solid waste management practices within the region;

(2) Prepare and recommend to the council a solid waste management plan for the district;

(3) Identify illegal dump sites and provide all available information about such sites to the appropriate county prosecutor and to the department;

(4) Establish an education program to inform the public about responsible waste management practices;

(5) Establish procedures to minimize the introduction of small quantities of hazardous waste, including household hazardous waste, into the solid waste stream;

(6) Assure adequate capacity to manage waste which is not otherwise removed from the solid waste stream; and

(7) Appoint one or more geographically balanced advisory committees composed of the representatives of commercial generators, representatives of the solid waste management industry, and two citizens unaffiliated with a solid waste facility or operation to assess and make recommendations on solid waste management.

4. The executive board may enter into contracts with any person for services related to any component of the solid waste management system. Bid specifications for solid waste management services shall be designed to meet the objectives of sections 260.200 to 260.345, encourage small businesses to engage and compete in the delivery of waste management services and to minimize the long-run cost of managing solid waste. Bid specifications shall enumerate the minimum components and minimum quantities of waste products which shall be recycled by the successful bidder. The board shall divide the district into units to maximize access for small businesses when it requests bids for solid waste management services.

5. No person shall serve as a member of the council or of the executive board who is a stockholder, officer, agent, attorney or employee or who is in any way pecuniarily interested in any business which engages in any aspect of solid waste management regulated under sections 260.200 to 260.345; provided, however, that such member may own stock in a publicly traded corporation which may be involved in waste management as long as such holdings are not substantial.

(L. 1990 S.B. 530)

Solid waste management plan, submitted to department, contents, procedures--approval, revision of plan--funds may be made available, purpose.

260.325. 1. The executive board of each district shall submit to the department a plan which has been approved by the council for a solid waste management system serving areas within its jurisdiction and shall, from time to time, submit officially adopted revisions of its plan as it deems necessary or the department may require. In developing the district's solid waste management plan, the board shall consider the model plan distributed to the board pursuant to section 260.225. Districts may contract with a licensed professional engineer or as provided in chapter 70, RSMo, for the development and submission of a joint plan.

2. The board shall hold at least one public hearing in each county in the district when it prepares a proposed plan or substantial revisions to a plan in order to solicit public comments on the plan.

3. The solid waste management plan shall be submitted to the department within eighteen months of the formation of the district. The plan shall be prepared and submitted according to the procedures specified in section 260.220 and this section.

4. Each plan shall:

(1) Delineate areas within the district where solid waste management systems are in existence;

(2) Reasonably conform to the rules and regulations adopted by the department for implementation of sections 260.200 to 260.345;

(3) Delineate provisions for the collection of recyclable materials or collection points for recyclable materials;

(4) Delineate provisions for the collection of compostable materials or collection points for compostable materials;

(5) Delineate provisions for the separation of household waste and other small quantities of hazardous waste at the source or prior to disposal;

(6) Delineate provisions for the orderly extension of solid waste management services in a manner consistent with the needs of the district, including economic impact, and in a manner which will minimize degradation of the waters or air of the state, prevent public nuisances or health hazards, promote recycling and waste minimization and otherwise provide for the safe and sanitary management of solid waste;

(7) Take into consideration existing comprehensive plans, population trend projections, engineering and economics so as to delineate those portions of the district which may reasonably be expected to be served by a solid waste management system;

(8) Specify how the district will achieve a reduction in solid waste placed in sanitary landfills through waste minimization, reduction and recycling;

(9) Establish a timetable, with milestones, for the reduction of solid waste placed in a landfill through waste minimization, reduction and recycling;

(10) Establish an education program to inform the public about responsible waste management practices;

(11) Establish procedures to minimize the introduction of small quantities of hazardous waste, including household hazardous waste, into the solid waste stream;

(12) Establish a time schedule and proposed method of financing for the development, construction and operation of the planned solid waste management system together with the estimated cost thereof;

(13) Identify methods by which rural households that are not served by a regular solid waste collection service may participate in waste reduction, recycling and resource recovery efforts within the district; and

(14) Include such other reasonable information as the department shall require.

5. The board shall review the district's solid waste management plan at least every twenty-four months for the purpose of evaluating the district's progress in meeting the requirements and goals of the plan, and shall submit plan revisions to the department and council.

6. In the event any plan or part thereof is disapproved, the department shall furnish any and all reasons for such disapproval and shall offer assistance for correcting deficiencies. The executive board shall within sixty days revise and resubmit the plan for approval or request a hearing in accordance with section 260.235. Any plan submitted by a district shall stand

approved one hundred twenty days after submission unless the department disapproves the plan or some provision thereof.

7. The director may institute appropriate action under section 260.240 to compel submission of plans in accordance with sections 260.200 to 260.345 and the rules and regulations adopted pursuant to sections 260.200 to 260.345.

8. The provisions of section 260.215 to the contrary notwithstanding, any county within a region which on or after January 1, 1995, is not a member of a district shall by June 30, 1995, submit a solid waste management plan to the department of natural resources. Any county which withdraws from a district and all cities within the county with a population over five hundred shall submit a solid waste plan or a revision to an existing plan to the department of natural resources within one hundred eighty days of its decision not to participate. The plan shall meet the requirements of section 260.220 and this section.

9. Funds may, upon appropriation, be made available to cities, counties and districts, under section 260.335, for the purpose of implementing the requirements of this section.

(L. 1990 S.B. 530, A.L. 1991 S.B. 45, A.L. 1995 S.B. 60 & 112)

Landfill fee, amount--solid waste management fund, created, purpose--department to enforce--transfer station, fee charged --free disposal day, notice.

260.330. 1. Except as otherwise provided in subsection 6 of this section, effective October 1, 1990, each operator of a solid waste sanitary landfill shall collect a charge equal to one dollar and fifty cents per ton or its volumetric equivalent of solid waste accepted and each operator of the solid waste demolition landfill shall collect a charge equal to one dollar per ton or its volumetric equivalent of solid waste accepted. Each operator shall submit the charge, less collection costs, to the department of natural resources for deposit in the "Solid Waste Management Fund" which is hereby created. On October 1, 1992, and thereafter, the charge imposed herein shall be adjusted annually by the same percentage as the increase in the general price level as measured by the Consumer Price Index for All Urban Consumers for the United States, or its successor index, as defined and officially recorded by the United States Department of Labor or its successor agency. Collection costs shall be established by the department and shall not exceed two percent of the amount collected pursuant to this section.

2. The department shall, by rule and regulation, provide for the method and manner of collection.

3. The charges established in this section shall be enumerated separately from the disposal fee charged by the landfill and may be passed through to persons who generated the solid waste. Moneys shall be transmitted to the department shall be no less than the amount collected less collection costs and in a form, manner and frequency as the department shall prescribe. The provisions of section 33.080, RSMo, to the contrary notwithstanding, moneys in the account shall not lapse to general revenue at the end of each biennium. Failure to collect the charge does not relieve the operator from responsibility for transmitting an amount equal to the charge to the department.

4. The department may examine or audit financial records and landfill activity records and measure landfill usage to verify the collection and transmittal of the charges established in

this section. The department may promulgate by rule and regulation procedures to ensure and to verify that the charges imposed herein are properly collected and transmitted to the department.

5. Effective October 1, 1990, any person who operates a transfer station in Missouri shall transmit a fee to the department for deposit in the solid waste management fund which is equal to one dollar and fifty cents per ton or its volumetric equivalent of solid waste accepted. Such fee shall be applicable to all solid waste to be transported out of the state for disposal. On October 1, 1992, and thereafter, the charge imposed herein shall be adjusted annually by the same percentage as the increase in the general price level as measured by the Consumer Price Index for All Urban Consumers for the United States, or its successor index, as defined and officially recorded by the United States Department of Labor or its successor agency. The department shall prescribe rules and regulations governing the transmittal of fees and verification of waste volumes transported out of state from transfer stations. Collection costs shall also be established by the department and shall not exceed two percent of the amount collected pursuant to this subsection. A transfer station with the sole function of separating materials for recycling or resource recovery activities shall not be subject to the fee imposed in this subsection.

6. Each political subdivision which owns an operational solid waste disposal area may designate, pursuant to this section, up to two free disposal days during each calendar year. On any such free disposal day, the political subdivision shall allow residents of the political subdivision to dispose of any solid waste which may be lawfully disposed of at such solid waste disposal area free of any charge, and such waste shall not be subject to any state fee pursuant to this section. Notice of any free disposal day shall be posted at the solid waste disposal area site and in at least one newspaper of general circulation in the political subdivision no later than fourteen days prior to the free disposal day.

(L. 1990 S.B. 530, A.L. 1995 S.B. 60 & 112, A.L. 1999 H.B. 603, et al.)

Distribution of fund moneys, uses--grants, distribution of moneys --advisory board, solid waste, duties.

260.335. 1. For fiscal years 1992-1997, one million dollars from the solid waste management fund shall be made available, upon appropriation, to the department and the environmental improvement and energy resources authority to fund activities that promote the development and maintenance of markets for recovered materials, and beginning in fiscal year 1998, ten percent of the moneys in the solid waste management fund, from August 28, 2004, to August 28, 2005, not to exceed eight hundred thousand dollars, shall be made available for such purposes. Up to nineteen percent of such moneys may be used, upon appropriation, to administer the management of household hazardous waste and agricultural hazardous waste from family farms and family farm corporations, as defined in section 350.010, RSMo, to provide for establishment of an education program and a plan for the collection of household hazardous waste on a statewide basis by January 1, 2000. After August 28, 2005, no more than one million dollars shall be made available for such purposes. Up to fifteen percent of such moneys may be used upon appropriation to administer the management of household hazardous waste and agricultural hazardous waste from family farms and family farm corporations, as defined in sections 350.010, RSMo, to provide for establishment of an education program and a plan for the collection of household hazardous waste on a statewide basis by January 1, 2000. The department and the

authority shall establish a joint interagency agreement with the department of economic development to identify state priorities for market development and to develop the criteria to be used to judge proposed projects. Additional moneys may be appropriated in subsequent fiscal years if requested. The authority shall establish a procedure to measure the effectiveness of the grant program under this subsection and shall provide a report to the governor and general assembly by January fifteenth of each year regarding the effectiveness of the program.

2. All remaining revenues deposited into the fund each fiscal year after moneys have been made available for market development under subsection 1 of this section shall be allocated as follows:

(1) From August 28, 2004, to August 28, 2005, up to forty-two percent of the revenues shall be dedicated, upon appropriation, to the elimination of illegal solid waste disposal, to identify and prosecute persons disposing of solid waste illegally, to conduct solid waste permitting activities, to administer grants and perform other duties imposed in sections 260.200 to 260.345 and section 260.432. After August 28, 2005, up to twenty-five percent of the revenues shall be dedicated, upon appropriations, to the activities and duties authorized in this subdivision;

(2) From August 28, 2004, to August 28, 2005, at least fifty-eight percent of the revenues shall be allocated through grants, upon appropriation, to participating cities, counties, and districts. After August 28, 2005, up to fifty percent of the revenues shall be allocated through grants, upon appropriation, to participating districts. Forty percent of the revenue generated within each region and allocable under this subdivision may be allocated to the district upon approval of the department for implementation of a solid waste management plan and district operations, and sixty percent of the revenue generated within each region and allocable under this subdivision shall be allocated to the cities and counties of the district or to persons or entities providing solid waste management, waste reduction, recycling and related services in the cities and counties. For the purposes of this subdivision, revenue generated within each district shall be determined from the previous year's data. From August 28, 2004 to August 28, 2005, each district shall receive a minimum of seventy-five thousand dollars under this subdivision. After August 28, 2005, each district shall receive a minimum of forty-five thousand dollars under this subdivision. Each district receiving moneys under this subdivision shall expend such moneys pursuant to a solid waste management plan required under section 260.325, and only in the case that the district is in compliance with planning requirements established by the department, and shall submit, within ninety days of the end of the fiscal year, an audited report of the expenditure of all funds received under this subsection. Moneys shall be awarded based upon grant applications. Any moneys remaining in any fiscal year due to insufficient or inadequate applications may be reallocated pursuant to this subdivision.

(3) From August 28, 2004, to August 28, 2005, any remaining moneys in the fund shall be used, upon appropriation, to provide grants for statewide solid waste management planning or research projects to any district, county or city of the state or to any other person or entity involved in waste reduction or recycling or for contracted services to further the purposes of section 260.225 and sections 260.255 to 260.345. After August 28, 2005, any remaining moneys in the fund shall be used, upon appropriation, to provide grants or loans for statewide solid waste management projects to any district,

county or city of the state or to any other person or entity involved in waste reduction or recycling to further the purposes of sections 260.255 to 260.345. Solid waste management districts may apply annually to the department for a three-to-one matching grant of up to twenty thousand dollars per district per year to be used for the purpose of district operations;

(4) Funds may be made available under this subsection for the administration and grants of the used motor oil program described in section 260.253;

(5) The department and the environmental improvement and energy resources authority shall conduct sample audits of grants provided under this subsection.

3. The advisory board created in section 260.345 shall recommend criteria to be used to allocate grant moneys to districts, cities and counties. These criteria shall establish a priority for proposals which provide methods of solid waste reduction and recycling. The department shall promulgate criteria for evaluating grants by rule and regulation. Projects of cities and counties located within a district which are funded by grants under this section shall conform to the district solid waste management plan.

4. Beginning July 1, 2004, a joint committee appointed by the speaker of the house of representatives and the president pro tem of the senate shall consider proposals for fees, restructuring the distribution of the fees between solid waste districts, grant recipients and the department. The committee shall consider options for the distributions of the tipping fee to the solid waste districts and any other matters it deems appropriate. The committee shall prepare and submit a report including its recommendation for changes to the governor, the house of representatives, and the senate no later than December 31, 2004.

5. The funds awarded to the districts, counties and cities pursuant to this section shall be used for the purposes set forth in sections 260.300 to 260.345, and shall be used in addition to existing funds appropriated by counties and cities for solid waste management and shall not supplant county or city appropriated funds.

6. The department, in conjunction with the solid waste advisory board, shall review the performance of all grant recipients to ensure that grant moneys were appropriately and effectively expended to further the purposes of the grant, as expressed in the recipient's grant application. The grant application shall contain specific goals and implementation dates, and grant recipients shall be contractually obligated to fulfill same. The department may require the recipient to submit periodic reports and such other data as are necessary, both during the grant period and up to five years thereafter, to ensure compliance with this section. The department may audit the records of any recipient to ensure compliance with this section. Recipients of grants under sections 260.300 to 260.345 shall maintain such records as required by the department. If a grant recipient fails to maintain records or submit reports as required herein, refuses the department access to the records, or fails to meet the department's performance standards, the department may withhold subsequent grant payments, if any, and may compel the repayment of funds provided to the recipient pursuant to a grant. The department shall make available all of the unencumbered funds generated during prior fiscal years by the fees established under section 260.330 through grants or loans to solid waste management areas and processing facilities, municipalities, counties, districts, and other appropriate persons who demonstrate a need for assistance to comply with section 260.250. Such grants or loans shall be used for educational programs, transportation, low-interest or no-interest loans to purchase

property for composting or other solid waste source reduction activities stated to facilitate compliance with section 260.250.

7. The department shall provide for a security interest in any machinery or equipment purchased through grant moneys distributed pursuant to this section.

8. If the moneys are not transmitted to the department within the time frame established by the rule promulgated, interest shall be imposed on the moneys due the department at the rate of ten percent per annum from the prescribed due date until payment is actually made. These interest amounts shall be deposited to the credit of the solid waste management fund.

(L. 1990 S.B. 530, A.L. 1993 S.B. 80, et al., A.L. 1995 S.B. 60 & 112, 2004 S.B. 1040)

Educational and informational programs, department to conduct, how.

260.342. The department of natural resources shall collect and disseminate information and conduct educational and training programs that assist in the implementation of sections 260.200 to 260.345. The information and programs shall be designed to enhance district, county and city solid waste management systems and to inform the public of the relationship between an individual's consumption of goods and services, the generation of different types and quantities of solid waste and the implementation of solid waste management priorities under sections 260.200 to 260.345. Educational information shall also address other environmental concerns associated with solid waste management including energy consumption and conservation; air and water pollution; and land use planning. The department of natural resources may cooperate with the department of elementary and secondary education for the purpose of developing specific educational curriculum and programs. The information and programs shall be prepared for use on a statewide basis for the following:

- (1) Municipal, county and state officials and employees;
- (2) Kindergarten through post-baccalaureate students and teachers;
- (3) Private solid waste scrap brokers, dealers and processors;
- (4) Businesses which use or could use recycled materials or which produce or could produce products from recycled materials, and persons who support or serve these businesses; and
- (5) The general public.

(L. 1990 S.B. 530)

Solid waste advisory board, members--qualifications--duties and powers--removal of board member for failure to attend meetings, when.

260.345. A state "Solid Waste Advisory Board" is created within the department of natural resources. The advisory board shall be composed of the chairman of the executive board of each of the solid waste management districts and other members as provided in this section. Up to five additional members shall be appointed by the director of which up to two may represent the solid waste management industry and have an economic interest in or activity with any solid waste facility or operation, and at least one such member shall represent a locally owned solid waste management business, and the remaining members shall be public members who have demonstrated interest in solid waste management issues and shall have no economic interest in or

activity with any solid waste facility or operation but may own stock in a publicly traded corporation which may be involved in waste management as long as such holdings are not substantial. The appointment of any member by the director shall be terminated if the member fails to attend at least fifty percent of the board meetings in any calendar year. The advisory board shall advise the department regarding:

- (1) The efficacy of its technical assistance program;
- (2) Solid waste management problems experienced by solid waste management districts;
- (3) The effects of proposed rules and regulations upon solid waste management within the districts;
- (4) Criteria to be used in awarding grants pursuant to section 260.335;
- (5) Waste management issues pertinent to the districts;
- (6) The development of improved methods of solid waste minimization, recycling and resource recovery; and
- (7) Such other matters as the advisory board may determine.

(L. 1990 S.B. 530, A.L. 1995 S.B. 60 & 112)

640.018. 1. The department of natural resources shall not place in any permit any requirement, provision, stipulation, or any other restriction which is not prescribed or authorized by regulation or statute, unless the requirement, provision, stipulation, or other restriction is pursuant to the authority addressed in statute.

2. Prior to submitting a permit to public comment the department of natural resources shall deliver such permit to the permit applicant at the contact address on the permit application for final review. In the interest of expediting permit issuance, permit applicants may waive the opportunity to review draft permits prior to public notice. The permit applicant shall have ten days to review the permit for errors. Upon receipt of the applicant's review of the permit, the department of natural resources shall correct the permit where nonsubstantive drafting errors exist. The department of natural resources shall make such changes within ten days and submit the permit for public comment. If the permit applicant is not provided the opportunity to review permits prior to submission for public comment, the permit applicant shall have the authority to correct drafting errors in their permits after they are issued without paying any fee for such changes or modifications.

3. In any matter where a permit is denied by the department of natural resources pursuant to authorities granted in this chapter and chapters 260, 278, 319, 444, 643, and 644, RSMo, the hazardous waste management commission in chapter 260, RSMo, the state soil and water districts commission in chapter 278, RSMo, the land reclamation commission in chapter 444, RSMo, the safe drinking water commission in this chapter, the air conservation commission in chapter 643, RSMo, and the clean water commission in chapter 644, RSMo, such denial shall clearly state the basis for such denial.

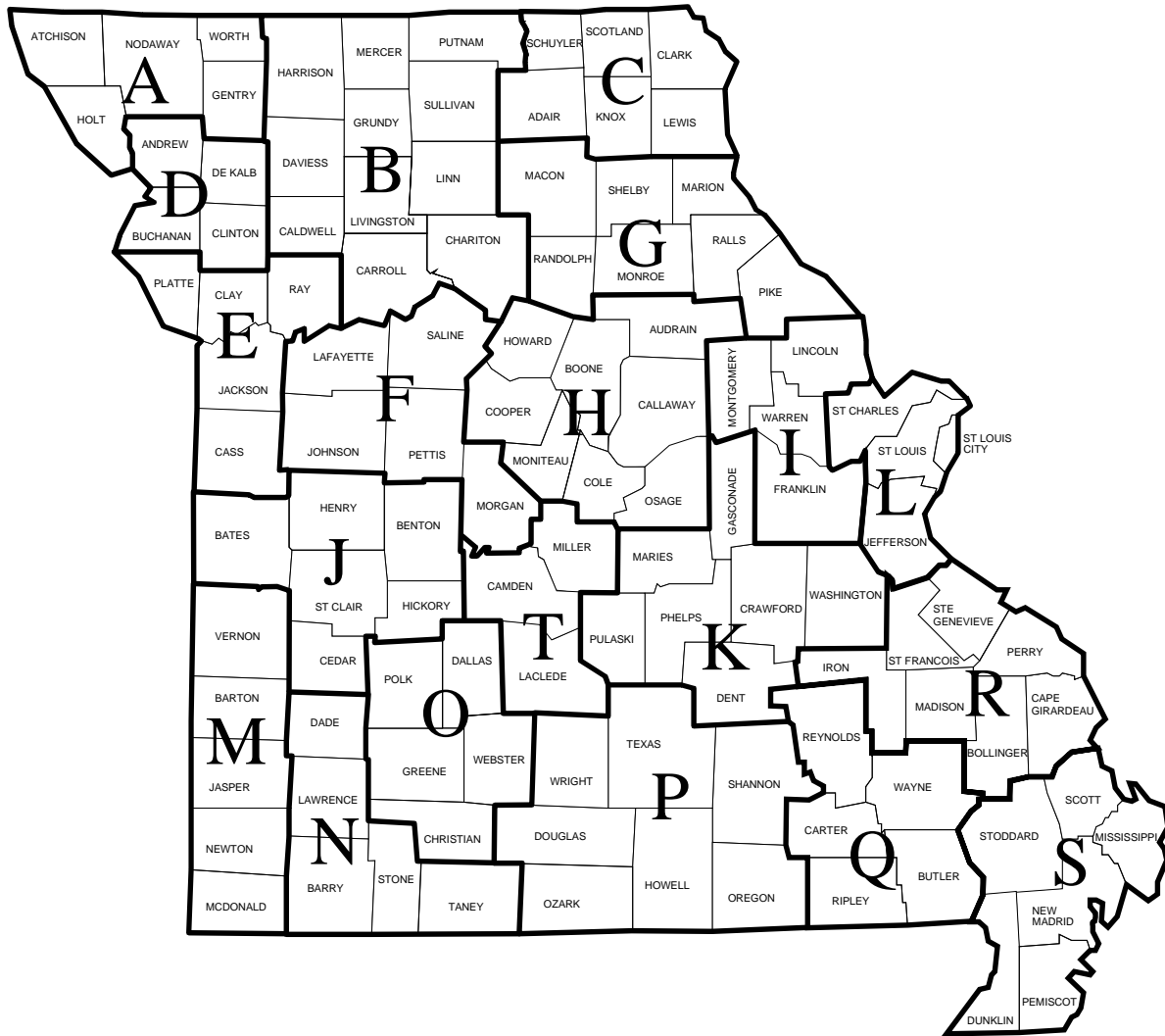
4. Once a permit or action has been approved by the department, the department shall not revoke or change, without written permission from the permittee, the decision for a period of one year or unless the department determines that immediate action is necessary to protect human health, public welfare, or the environment.

(2004 H.B. 980)

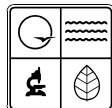
APPENDIX B

SOLID WASTE MANAGEMENT REGIONS OF MISSOURI

SOLID WASTE MANAGEMENT REGIONS OF MISSOURI



— Solid Waste Management Regional Boundaries



MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
SOLID WASTE MANAGEMENT PROGRAM

Following the establishment of solid waste management regional boundaries, solid waste management districts were formed in each region. All Missouri counties, with the exception of Buchanan County, and nearly all of the cities with a population of 500 or greater are members of a solid waste management district. The Solid Waste Advisory Board is made up of the chair of each district plus five non-district members representing citizens and the solid waste industry. The following pages contain the names and contact information for the Solid Waste Advisory Board and the planners who provide staff support for the districts. This information changes frequently – for a current list please contact the department at 1-800-361-4827 or visit our web page at www.dnr.mo.gov/env/swmp.



Solid Waste Advisory Board

Solid Waste Management District Chairpersons:

Region A - Northwest MO Reg. SWMD

Ms. Debbie Roach

Rt. 4, Box 182, Grant City, MO 64456
660-564-3698 FAX 660-582-8735

Region B - North MO SWMD

Mr. Nelson Heil

Carroll Co. Courthouse, 8 S. Main, Ste. 6, Carrollton, MO 64633
660-542-0615 FAX 660-542-0621

Region C - Northeast MO SWMD

Mr. Pete Mayfield

Knox Co. Courthouse, 107 N. 4th St., Edina, MO 63537
660-397-2688 FAX 660-397-3331

Region D - Region D Recycling & Waste Mgt. Dist.

Mr. Greg Wall

P.O. Box 206, Savannah, MO 64485
816-324-5716 FAX 816-324-6154

Region E - Mid-America Reg. Council SWMD

Mr. Stanley J. Salva

103 S. Sterling, Sugar Creek, MO 64054
816-252-4400 x132 FAX 816-252-7082

Region F - West Central MO SWMD

Mr. Harland Mieser

106 NE 2nd St., P.O. Box 59, Concordia, MO 64020
660-463-1000 FAX 660-463-1001

Region G - Mark Twain SWMD

Mr. Phillip Shatzer

124 W. Caldwell, Paris, MO 65275
660-327-4630 FAX 660-327-4280

Region H - Mid-MO SWMD

Mr. Ray Beck

P.O. Box 6015, Columbia, MO 65205
573-874-6338 FAX 573-442-8828

Region I - East Central SWMD

Mr. Gary Hoette

211 E. Third Street, Montgomery City, MO 63361
573-564-3733 FAX 573-564-3914

Region J - Quad-Lakes SWMD

Mr. Lance Hutton

Hickory Co. Crt. Hse., P.O. Box 3, Hermitage, MO 65668
417-745-6450 FAX 417-745-6057

Region K - Ozark Rivers SWMD

Mr. Scott Murrell

ATZT-DPW-EE, Bld. 2101, Ft. Leonard Wood, MO 65473
573-596-0882 FAX 573-596-0869

Region L - St. Louis-Jefferson SWMD

Mr. Bob Wagner

7052 Kingsbury, University City, MO 63130
314-725-1544 FAX

Region M - Region M SWMD

Mr. Lynn Calton

1104 Broadway, Lamar, MO 64759
417-682-5554 FAX 417-682-3288

Region N - Southwest MO SWMD

Mr. Larry VanGilder

601 Compton Dr., Branson, MO 65616
417-337-8562 FAX 417-335-2571

Region O - Solid Waste District "O"

Mr. Tim Smith

940 Boonville, Rm. 305, Springfield, MO 65802
417-868-4861 FAX 417-868-4175

Region P - South Central SWMD

Mr. Gary L. Collins

Rt. 1, Box 4030, Dora, MO 65637
417-261-2229 FAX 417-679-2476

Region Q - Ozark Foothills Reg. SWMD

Mr. William Kennon

100 Courthouse Square, Suite 2, Doniphan, MO 63935
573-996-3215 FAX

Region R - Southeast MO SWMD

Mr. C. Timothy Morgan

City Hall, P.O. Box 549, Fredericktown, MO 63645
573-783-3683 FAX 573-783-5152

Region S - Bootheel SWMD

Mr. Steve Duke

P.O. Box 397, 164 Mitchell St., Malden, MO 63863
573-276-2242 FAX 573-276-6034

Region T - Lake of the Ozarks SWMD

Mr. Robert O'Keefe

1295 Summit Circle, Osage Beach, MO 65065
573-348-9472 FAX 573-346-2007

Additional members appointed by the MoDNR Director:

Fred Weber, Inc.

Mr. Thomas P. Dunne, Jr.

2320 Creve Coeur Mill Road, P. O. Box 2501
Maryland Heights, MO 63043-8501
314-344-0070 FAX 314-344-0356

Waste Corporation of Missouri

Mr. Kevin O'Brien

2120 West Bennett Street, Springfield, MO 65807
816-223-2870 FAX 816-347-9937

Ms. Rachel R. Burkemper

P. O. Box 209, 260 Main Street
Troy, MO 63379

Computer Recycling Center

Mr. Ken Reiss

536 E. Commercial St., Springfield, MO 65803
417-866-2588 FAX: 417-866-2177

City of Moberly

Ms. Mary E. West

101 W. Reed Street, Moberly, MO 65270
660-263-4420 FAX 660-263-9398



Solid Waste Management District Planners

REGION A - Northwest Missouri SWMD

Mr. Terrance Nickle

Northwest MO Regional Council of Governments
114 W. Third, Maryville, MO 64468
660-582-5121 FAX 660-582-7264

REGION B - North Missouri SWMD

Mr. Randy Railsback

North Missouri SWMD
1104 Main Street, P.O. Box 28, Trenton, MO 64683
660-359-5086 FAX 660-359-3096

REGION C - Northeast Missouri SWMD

Ms. Janna Cline

Northeast MO Regional Planning Commission
326 E. Jefferson, P.O. Box 248, Memphis, MO 63555
660-465-7281 FAX 660-465-7163

REGION D - Region D Recycling & Waste Mgt. Dist.

Ms. Brenda Kennedy

P.O. Box 139, 114 Main, Clarksdale, MO 64430
816-393-5250 FAX 816-393-5269

REGION E - Mid-America Reg. Council SWMD

Ms. Lisa Danbury

Mid-America Regional Council SWMD
600 Broadway, Suite 300, Kansas City, MO 64105
816-474-4240 FAX 816-421-7758

REGION F - West Central Missouri SWMD

Mr. Scott Paterson

Prairie Rose Resource Conservation & Development
106 N.E. 2nd St., P.O. Box 59, Concordia, MO 64020
660-463-1000 FAX 660-463-1001

REGION G - Mark Twain SWMD

Mr. Drexel Rothweiler

Mark Twain SWMD
P.O. Box 1113, Hannibal, MO 63401
573-221-5912 FAX 573-221-5915

REGION H - Mid-Missouri SWMD

Mr. Matt Harline

Mid-Missouri SWMD
P.O. Box 6015, Columbia, MO 65205
573-874-7574 FAX 573-874-7526

REGION I - East Central SWMD

Ms. Michelle Scola

Boonslick Regional Planning Commission
P.O. Box 429, Warrenton, MO 63383
636-456-3473 FAX 636-456-2329

REGION J - Quad-Lakes SWMD

Mr. Stanley "Bud" Hayes

Kaysinger Basin Regional Planning Commission
908 N. Second St., Clinton, MO 64735
660-885-3393 FAX 660-885-4166

REGION K - Ozark Rivers SWMD

Ms. Tammy Snodgrass

Meramec Regional Planning Commission
#4 Industrial Drive, St. James, MO 65559
573-265-2993 FAX 573-265-3550

REGION L - St. Louis-Jefferson SWMD

Mr. David Berger

St. Louis-Jefferson SWMD
7525 Sussex Avenue, St. Louis, MO 63143
314-645-6753 FAX 314-645-6504

REGION M - Region M SWMD

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APPENDIX C

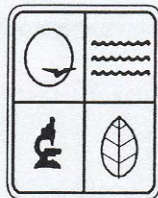
THE MISSOURI SOLID WASTE COMPOSITION STUDY – INTRODUCTION & SUMMARY

Excerpt from

**THE MISSOURI SOLID WASTE
COMPOSITION STUDY**

Conducted by:
MIDWEST ASSISTANCE PROGRAM, Inc.
The Midwestern Rural Community Assistance Program

Funded by a grant from:
**THE MISSOURI DEPARTMENT OF
NATURAL RESOURCES**



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Jim Hull Director, Solid Waste Management Program

Kathy Weinsaft Former Chief of the Planning Unit, Solid Waste Management Program

Dennis Hanson Current Chief of the Planning Unit, Solid Waste Management Program

Katy D'Agostino Solid Waste Planner, Solid Waste Management Program

John Balkenbush Chief of Administration Unit, Solid Waste Management Program

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The waste sorters, who worked in all types of inclement weather and difficult conditions to get the results for this study.

Project Manager.....Dennis Siders

MSW Sort Supervisor.....Kristi Wilson

INTRODUCTION

The Missouri Waste Composition Study was a three-year effort to characterize and understand solid waste disposal in Missouri. The study was divided into two phases.

The first phase examined Municipal Solid Waste (MSW) at 19 landfills and transfer stations throughout Missouri. Municipal Solid Waste was separated, weighed, and recorded into 26 material categories. The methodology used, and the findings of phase I begin on page 93.

The second phase observed solid waste received at 14 Missouri landfills (actually 15 landfills were observed but the scale data from the Lee's Summit landfill was not useable and therefore that data is not included). Each solid waste load was classified into one of five components (Municipal Solid Waste, Construction, Demolition, Industrial, and Other waste) and the percentage of each material, within that component, was visually estimated and recorded. The methodology and findings of phase II begin on page 3.

Purpose of the Study

The Missouri Waste Composition Study was commissioned for the following reasons:

- Provide Information on changes in the Missouri solid waste components. In the 1987 Environmental Improvement and Energy Resources Authority (EI ERA) commissioned a limited baseline waste composition study. This study examined MSW at four locations in 1987 and estimated industrial waste based on SIC data. A comparison of the two waste components composition studies is listed on Pg. 113.
- Provide an estimate of the volume of recyclable materials still in the Missouri solid waste. The percentage of recyclable materials presently disposed into Missouri landfills offers opportunities for future recycling and waste reductions efforts.
- Provide data for the formulation of a statewide solid waste plan. The waste composition data provides detailed information, which is essential in planning solid waste policy for the next decade.
- Provide information on the current solid waste components which can be used by grant applicants to estimate available waste materials used by state agencies to evaluate grant applications, and by solid waste planners to target waste materials for future funding.
- Provide essential information for municipal and private recycling programs. Municipal and private recycling companies can use the data to predict material flows, route collection vehicles, plan processing and end market capacities, project revenues and operating expenses, and target educational materials.

Funding, Development, and Implementation

The Missouri Waste Composition Study was funded through grants from the Missouri Department of Natural Resources (DNR). The methodology for the study was developed jointly by the DNR Solid Waste Planners and the Midwest Assistance Program, Inc.(MAP). MAP conducted the study under the direction of Dennis Siders, Project Manager.

LANDFILLS OBSERVED

Landfill observation was actually the second phase of The Missouri Waste Composition Study. The hand sorting and categorizing of MSW was done prior to observing the landfills. However it is necessary to identify and understand the percentage each of the solid waste components (MSW, Construction, Demolition, Industrial, and Other) before examining the components separately. Therefore, phase II (landfill observations) will be discussed before phase I (MSW characterization).

The Problem

Many studies have been conducted throughout the United States to determine MSW composition. Some of these are discussed on page 111. However MSW is only one component of the overall solid waste problem. Until the entire solid waste component is examined and quantified, the volume of any one component cannot be accurately estimated. After completing phase I (MSW) it was known how much of each material was in Missouri's MSW component. For instance, about 18.7% of the MSW was food waste. But what did that percentage mean and what percentage of the total waste stream was MSW food waste?

Each landfill and transfer station reports their total waste received to DNR each quarter. After estimating import and export waste, DNR publishes a report on the total waste disposed in Missouri. However, it cannot be assumed that 18.7% of this total is food waste because the total is not exclusively MSW. There are other components of the waste stream included in the total. But how do we know what portion each of these components comprise, and what materials make up these other components?

Methodology

Several studies have been conducted to determine the composition of solid waste. Many states have conducted MSW waste sorts with methodologies similar to those used in phase I (page 93). This is a great way to characterize the MSW component but does not quantify the MSW component (40% - 90% of the local waste stream), or characterize the remaining solid waste components.

Franklin and Associates have developed a methodology to estimate waste flows based on production data. This method assumes that every manufactured item has a limited life cycle and then becomes waste. This methodology works great for national or international waste projections, but become less useful on a smaller scale.

The Missouri Waste Composition Study determined that the best way to estimate waste components (not waste generation or recovery) delivered to Missouri landfills, and the materials within these components, was to observe and record waste unloaded at Missouri landfills.

Landfill Selection

As of June 1st 1999, Missouri had 30 active landfills. Fifteen landfills were selected as being representative of all Missouri landfills (The City of Lee's Summit Landfill was observed but the data was not useable due to errors in the scale software program). The 14 observed landfills are listed below with the tonnage they received in 1998. A map of the 14 landfills, that were observed, is on page 5.

Landfills Observed	1998 Tonnage	% of Total State Tonnage
Black Oak	283,475	6.3%
Bridgeton	913,621	20.4%
Butler County	122,185	2.7%
City of Columbia	125,867	2.8%
City of St. Joseph	120,158	2.7%
Courtney Ridge	418,625	9.3%
Fred Weber	321,269	7.2%
Lamar	168,591	3.8%
Lemons	196,092	4.4%
Maple Hill	114,982	2.6%
Oak Ridge	262,365	5.8%
Peerless C&D	146,249	3.3%
Rockhill C&D	123,849	2.8%
Southeast	348,260	7.8%
Total observed landfills	3,665,588	81.7%
City of Lee's Summit*	80,682	1.8%
City of Springfield**	101,284	2.3%
14 rural landfills (not observed)***	628,512	13.9%
2 C&D landfills (not observed)****	12,557	0.3%
Total unobserved landfills	823,035	18.3%
Total for all Missouri Landfills (1998)	4,488,623	100%

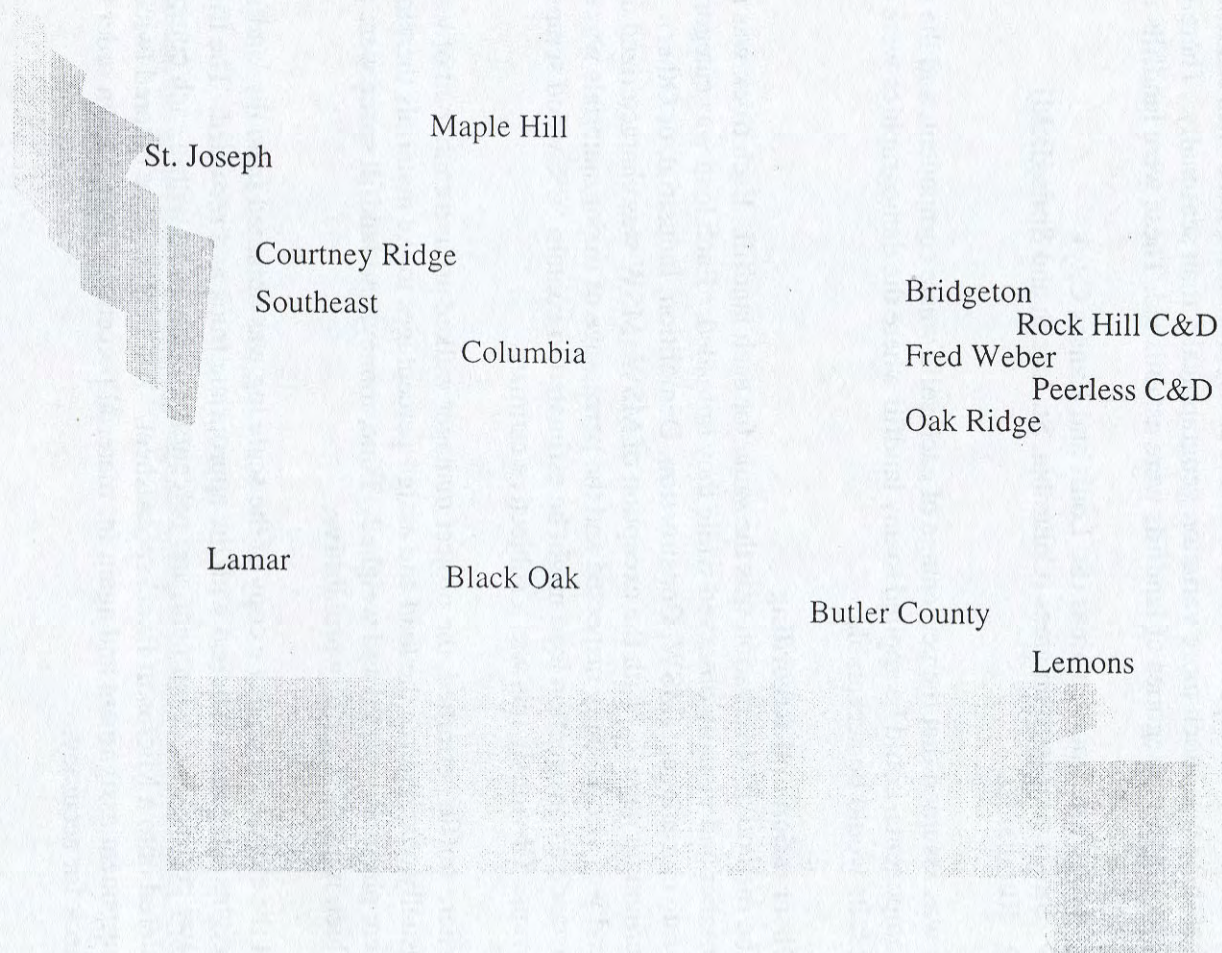
*The City of Lee's Summit landfill was observed but the scale data was not useable. A weighted average from Southeast and Courtney Ridge was used to estimate waste composition.

**The City of Springfield's landfill was not observed. Demographics and waste contracts are similar to the City of St. Joseph and therefore the waste composition was estimated to be similar to the City of St. Joseph Landfill.

***A weighted average from the 5 rural landfills, which were observed, was used to estimate waste composition.

**** A weighted average from the 2 C&D landfills which were observed was used to estimate waste composition.

Landfills Observed



Each of the 14 landfills listed on page four was observed for a one-week period. The only exception was the Peerless C&D, which was observed for two weeks in order to get seasonal data on C&D material flows. The premise, agreed upon by DNR and MAP, assumed that the waste received at each of the fourteen observed landfills during a randomly selected week would be similar to the waste received at that landfill during the entire year. Smaller landfills would be assumed to have the same composition as the weighted average of others landfills within their same geographic category or as in the case of Springfield, the same as a similar City.

Observations from phase I (MSW waste sorts) and discussions with landfill managers implied that there was much more variation geographically than seasonally. Therefore, three major demographic categories of landfills were established. These were landfills in:

- ❖ Large metropolitan areas (St. Louis and Kansas City)
- ❖ Small metropolitan areas (Columbia, St. Joseph and Springfield)
- ❖ Rural areas

It was assumed that the percentage of each solid waste component, and the materials within those components, could be applied to any landfill where the demographics were similar, and the results would be acceptable.

Observation and Recording

The method of observation was the same for each landfill. Each truck was recorded by name and number and visually observed while they unloaded. Each load was categorized into one of five waste components (MSW, Construction, Demolition, Industrial, or Other). These categories are defined on page 7. With the exception of MSW (MSW was characterized during phase I) each load was also visually inspected and the percentage of major materials was estimated. For instance a construction load might be estimated to contain 50% wood scraps and 50% dry wall scraps. Obviously this was a subjective estimate.

Where traffic permitted, the project manager walked around each load of waste several times to visually characterize the load and assign percentages to the materials therein. None of the loads were physically sorted and weighed. Time, money, and landfill space were all limiting factors, which made this activity prohibitive.

At the close of each day a copy of the scale log was obtained from the landfill staff. The scale weights were then matched with the appropriate truck and recorded. The truck number, weight, waste component assignment, and percentage of materials within each component were then entered onto a Microsoft Excel spreadsheet. All weights were entered twice, once for waste component assignment and again for material percentage estimates in order to assure a double check for accuracy.

The following table summarizes the observation data. In order to maintain consistency, the project manager personally observed all loads, made all estimates on waste composition, and assigned all material percentages.

Observation Data			
Landfill	Observation hours	Trucks Observed	Total tonnage observed
Black Oak	38	249	3,735
Bridgeton	47	1,063	9,196
Butler County	50	182	2,077
City of Columbia	55	470	1,808
City of St. Joseph	47	667	2,109
Courtney Ridge	45	733	4,350
Fred Weber	36	797	3,040
Lamar	47	197	2,769
Lemons	49	257	3,000
Maple Hill	38	221	1,757
Oak Ridge	44	720	6,172
Peerless C&D	96	777	5,355
Rockhill C&D	38	420	1,697
Southeast	44	660	4,485
Total	674	7,413	51,550

Definition of Waste Components

The solid waste stream is made up of a number of waste components. Identifying and defining these components is always difficult. There are no national guidelines or norms on how to categorize waste components. In order to accomplish the purposes outlined on page 1, the following guidelines were used to categorize solid waste into waste components:

Municipal Solid Waste (MSW)

For the purpose of this study MSW is defined as residential, institutional, or commercial waste that is disposed in small containers or plastic bags. This is a somewhat simplistic definition but is inclusive enough to cover most of the materials found in the MSW component. MSW is normally collected in packer trucks, which collect from residential, institutional, and commercial generators. In many cases the same truck will collect MSW from all three generators in the same load. MSW is generally delivered to the landfill in packer trucks or transfer trailers. Some rural landfills still receive MSW in open top trucks or trailers. Definitions of the sort categories contained within the MSW component are on page 97.

Construction Waste

The construction waste component was identified by interviewing the driver, when possible, concerning the origin of the load, and examining the contents of each load. Construction waste loads were primarily transported to the landfill in open top roll-off containers, dump trucks, or open trailers. Construction waste consists of mostly new construction material, which was a waste product of the construction process. The construction loads tended to be lighter, less weathered, and more homogeneous (all wood or dry wall, etc.) than demolition loads. As a

general rule construction waste materials are easier to recover and recycle than demolition waste materials. Definitions of the major materials contained within the construction waste component are on page 123.

Demolition Waste

Demolition waste materials are similar to construction waste materials and are traditionally included together as “construction and demolition (C&D)”. Demolition materials are older, usually mixed with other materials, and more difficult to recover or recycle. Demolition waste loads were usually transported to the landfill in open top roll-off containers, dump trucks, or open trailers. Roofing waste was typically delivered to the landfill by independent contractors and was not mixed with other materials. Demolition wood was more weathered, there was very little if any cardboard, and there was more masonry materials (brick, concrete blocks, rock and dirt) in the demolition waste component than the construction waste component. Definitions of the major materials contained within the demolition waste component are on page 127.

Industrial Waste

The industrial waste component is a waste product of industrial processing or industrial activity. Materials were identified and estimated when there was large volumes of the same material in a packer, compactor unit, or roll-off container. Industrial waste loads were normally homogeneous, containing a single waste product from a manufacturing process. Definitions of the major materials contained within the industrial waste component are on page 131.

Other Waste

Other waste is defined as waste which does not fit into one of the above categories or was handled differently at the landfill (i.e. soil-like materials used for daily cover, asbestos, etc.). Bulky items such as furniture, mattresses, appliances, bicycles, shelving etc. are included in the other waste category. Commercial yard waste such as brush, stumps, sewage sludge, and hay are also included in this category. Definitions of the major materials contained within the other waste component are on page 135

The results of each landfill observation are included on pages 9- 92. Each landfill profile contains a description of the facility, information about the observation period, tonnage and percentages of waste received during the observation period.

The summary table in each profile lists the tonnage of each material received during the observation period and the percentage of that material. The Percentages are applied to the total waste received by that facility in 1998 to provide an estimate of the total tonnage for each material received during 1998.

The charts in each profile illustrate the percentage of each waste component for that facility, the materials received within each waste component and percentage comparisons to other landfills and the state average.

Summary

The Missouri Solid Waste Composition Study was a three-year project to understand the characteristics and composition of solid waste entering transfer stations and landfills in Missouri.

Phase I examined Municipal Solid Waste (MSW) in 19 of the state's 20 solid waste management districts. During this two year activity, 140,581 pounds of residential and commercial MSW was hand sorted into 6 major material categories, 26 minor material categories, and 16 potentially hazardous categories. The results were recorded by weight and volume. Those results are explained on pages 93-122.

Phase II examined the non-MSW waste components at 14 landfills throughout Missouri. Waste loads deposited at these 14 landfills were observed for a one-week period at each facility. The waste was subjectively analyzed and recorded into one of five solid waste components (MSW, construction, demolition, industrial, and "other"). A further visual examination of each load was made and the percentage of each major material was estimated. Those estimated percentages were then applied to the weight of each load to determine the weight of each material. The results of each of the solid waste components (other than MSW) are explained on pages 123-138.

There were some minor differences found between disposal facilities examined in Phase I (see the chart on page 109). However during Phase II there was considerable difference in the waste composition of the landfills observed. Some of these differences could be explained through demographic similarities of the areas surrounding the landfills. The landfills were grouped by population demographics into three categories (large metropolitan landfills, small metropolitan landfills, and rural landfills). Results based on these groupings are explained on pages 139-166.

The table on page 168 lists the solid waste components and materials by landfill type and total for Missouri.

The charts on page 169 depicts the total solid waste components, the MSW component, and the construction component, in both tons per year and percent of the total.

The charts on page 171 depict the demolition waste components, the industrial waste components, and the "other" waste components, in both tons per year and percent of the total.

The charts on page 173 depict the tonnage for each solid waste material within each waste component, and the combined materials from all waste components.

MISSOURI SOLID WASTE COMPONENTS

MATERIAL	Large Metro		Small Metro		Rural		All MO. Landfills	
	Pct.	Estimated Tonnage*	Pct.	Estimated Tonnage**	Pct.	Estimated Tonnage***	Pct.	Estimated Tonnage
Municipal Solid Waste								
Paper	18.5%	482,802	15.1%	52,408	30.0%	457,956	22.1%	993,166
Glass	2.9%	75,390	1.8%	6,255	4.5%	68,848	3.4%	150,493
Metals	3.4%	89,892	2.3%	7,866	5.8%	88,243	4.1%	186,001
Plastics	7.2%	187,745	4.7%	16,158	12.0%	182,669	8.6%	386,572
Organics	15.3%	400,524	10.6%	36,951	25.7%	391,527	18.5%	829,002
Inorganics	2.4%	62,767	2.5%	8,582	3.6%	55,543	2.8%	126,892
TOTAL MSW	49.8%	1,301,140	36.9%	128,322	81.6%	1,244,785	59.6%	2,674,247
Construction Waste								
Wood	3.8%	100,208	2.4%	8,253	0.3%	4,447	2.5%	112,908
Dry Wall	1.7%	45,467	3.1%	10,753	0.2%	2,630	1.3%	58,850
Masonry	1.2%	31,772	0.8%	2,837	0.1%	1,681	0.8%	36,290
Metal	0.1%	2,485	0.1%	476	0.0%	305	0.1%	3,266
Plastic	0.3%	9,002	0.1%	411	0.0%	195	0.2%	9,608
Cardboard	0.7%	18,925	0.3%	1,113	0.0%	740	0.5%	20,778
Other	0.4%	11,662	0.3%	950	0.1%	1,109	0.3%	13,721
TOTAL CONSTRUCTION	8.4%	219,520	5.0%	17,500	0.7%	11,172	5.5%	248,192
Demolition Waste								
Wood	5.2%	136,045	8.6%	29,980	1.8%	26,827	4.3%	192,852
Dry Wall	1.0%	27,392	1.0%	3,471	0.6%	8,413	0.9%	39,276
Roofing	3.6%	93,866	3.8%	13,155	2.0%	30,096	3.1%	137,117
Masonry	4.7%	123,924	3.5%	12,100	0.4%	5,770	3.2%	141,794
Metal	0.6%	16,651	0.3%	1,073	0.1%	2,265	0.4%	19,989
Carpet	0.6%	15,779	0.6%	2,188	0.4%	5,843	0.5%	23,810
Other	0.8%	21,961	0.5%	1,653	0.2%	3,027	0.6%	26,641
TOTAL DEMOLITION	16.7%	436,426	18.3%	63,620	5.4%	82,241	13.0%	582,287
Industrial Waste								
Cardboard	3.3%	87,000	4.1%	14,397	1.1%	16,662	2.6%	118,059
Paper	0.9%	23,025	1.8%	6,149	1.0%	15,761	1.0%	44,935
Food	1.4%	37,333	5.7%	19,698	0.6%	8,691	1.5%	65,722
Metal	0.1%	1,414	0.6%	2,110	0.2%	3,216	0.2%	6,740
Wood	2.8%	72,612	3.4%	11,741	1.0%	14,960	2.2%	99,313
Plastic	0.9%	23,926	2.5%	8,703	1.1%	17,363	1.1%	49,992
Textiles	0.1%	2,496	0.1%	253	0.6%	8,516	0.3%	11,265
Rubber	0.5%	12,507	0.2%	752	0.7%	10,261	0.5%	23,520
Other	0.9%	24,438	2.8%	9,844	4.9%	74,629	2.4%	108,911
TOTAL INDUSTRIAL	10.9%	284,752	21.2%	73,546	11.1%	170,060	11.8%	528,358
Special Wastes								
Bulky Items	1.6%	41,096	1.5%	5,071	1.0%	14,616	1.4%	60,783
Soil and Inert Materials	9.8%	257,316	16.2%	56,290	0.0%	-	7.0%	313,606
Asbestos	1.3%	33,826	0.4%	1,369	0.1%	1,250	0.8%	36,445
Other	1.5%	40,038	0.4%	1,490	0.1%	2,270	1.0%	43,798
TOTAL SPECIAL	14.2%	372,275	18.5%	64,321	1.2%	18,137	10.1%	454,733
TOTAL WASTE STREAM	100%	2,614,920	100%	347,309	100%	1,526,394	100%	4,488,623

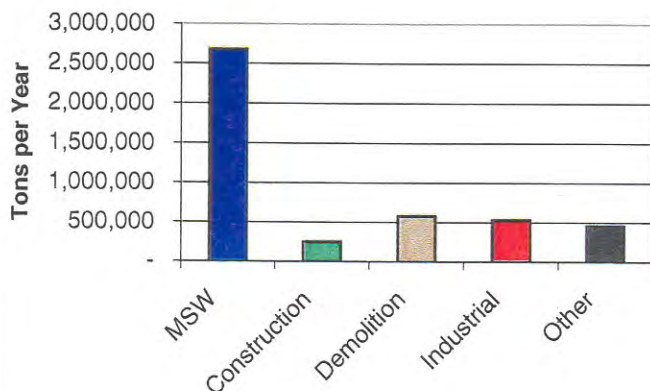
* Based on observation data from 5 sanitary and 2 C&D landfills, plus weighted average for Lee's Summit

** Based on observation data from 2 landfills, plus the weighted average for Springfield.

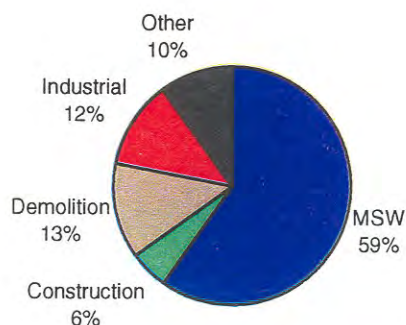
*** Based on observation data from 5 landfills, plus the weighted average from 14 sanitary and 2 C&D rural landfills

MISSOURI SOLID WASTE COMPONENTS

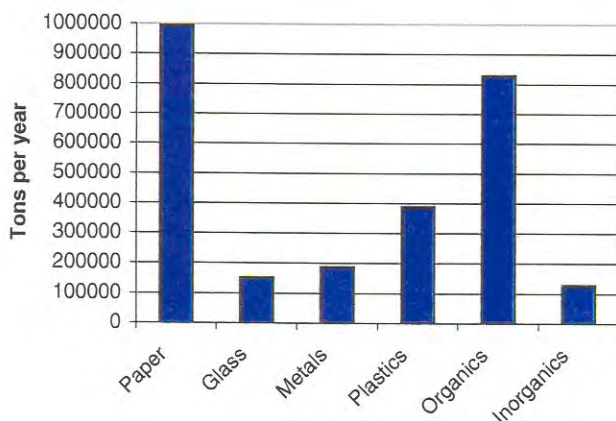
Solid Waste Components
4,488,623 Tons per Year



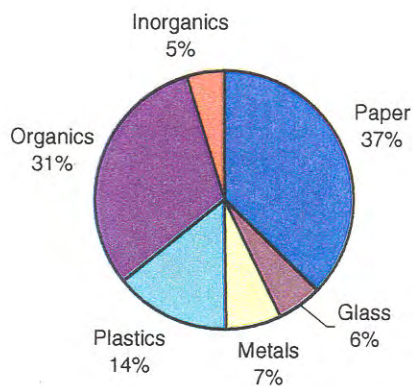
Solid Waste Composition



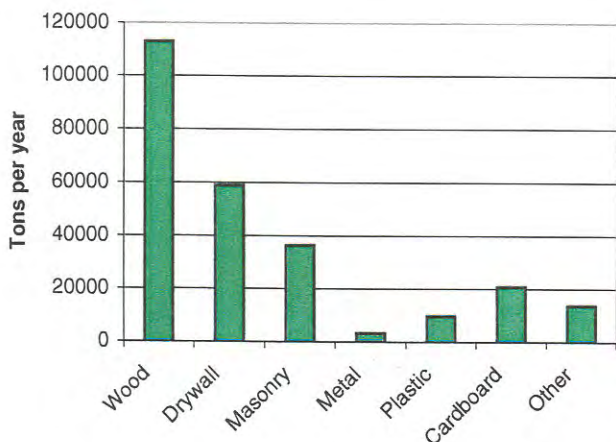
Materials in the MSW Component -
2,674,247 Tons per Year



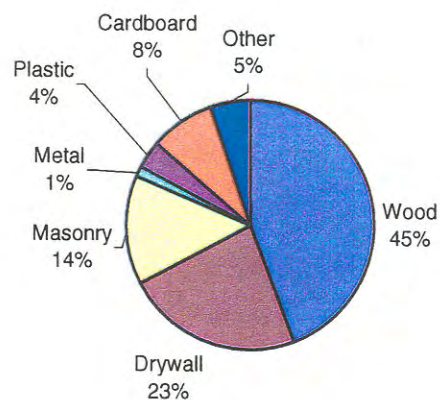
MSW Composition



Waste Materials in the Construction Waste Component -
248,192 Tons per Year

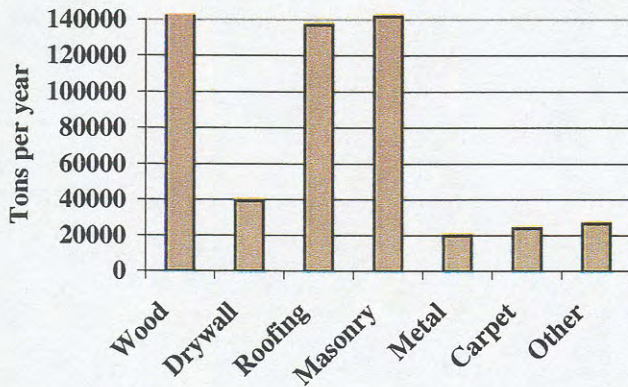


Construction Waste Composition

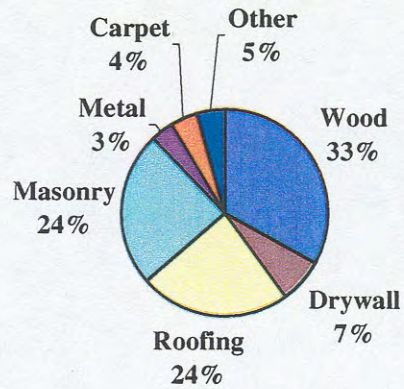


MISSOURI SOLID WASTE COMPONENTS

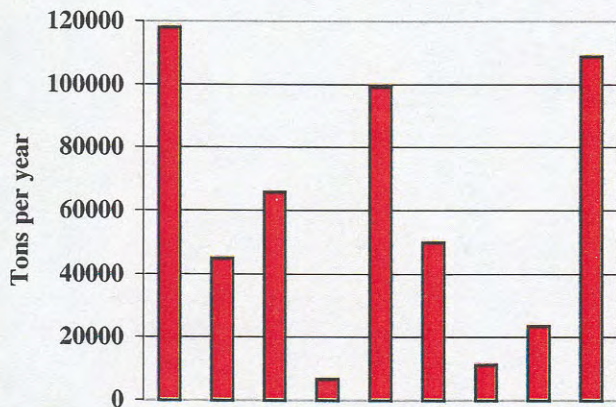
Waste Materials in the Demolition Waste Component - 436,426



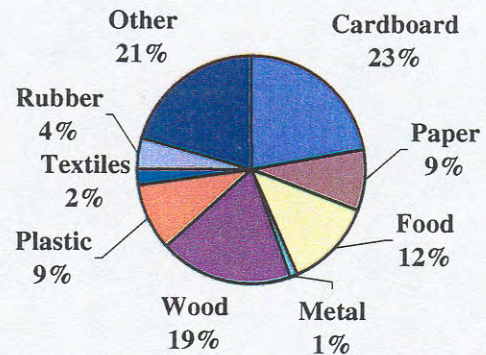
Demolition Waste Composition



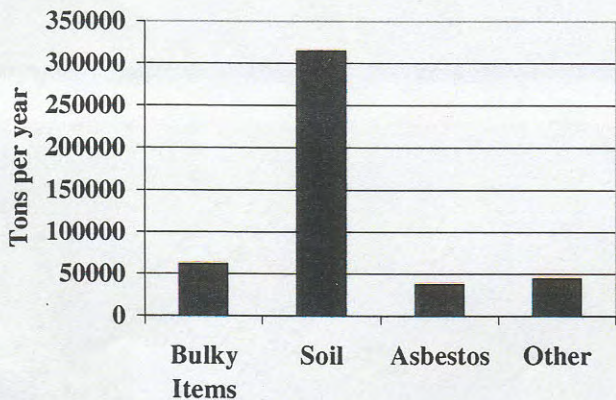
Waste Materials in the Industrial Waste Component - 528,358 Tons per Year



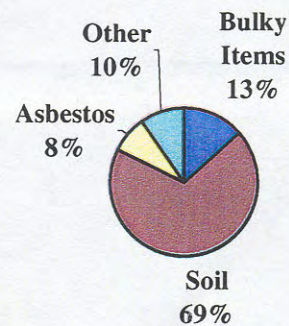
Industrial Waste Composition



Waste Materials in the "Other" Waste Component - 454,733 tons per Year

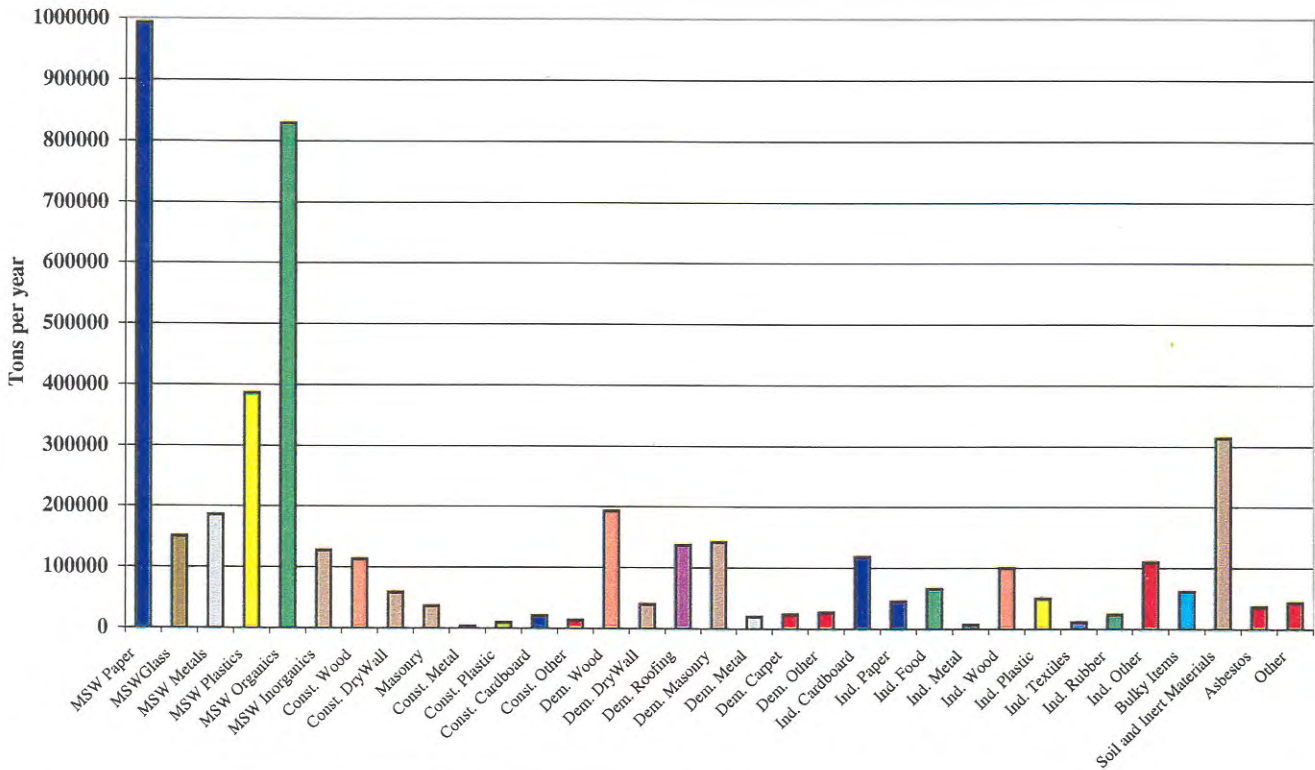


Other Waste Composition

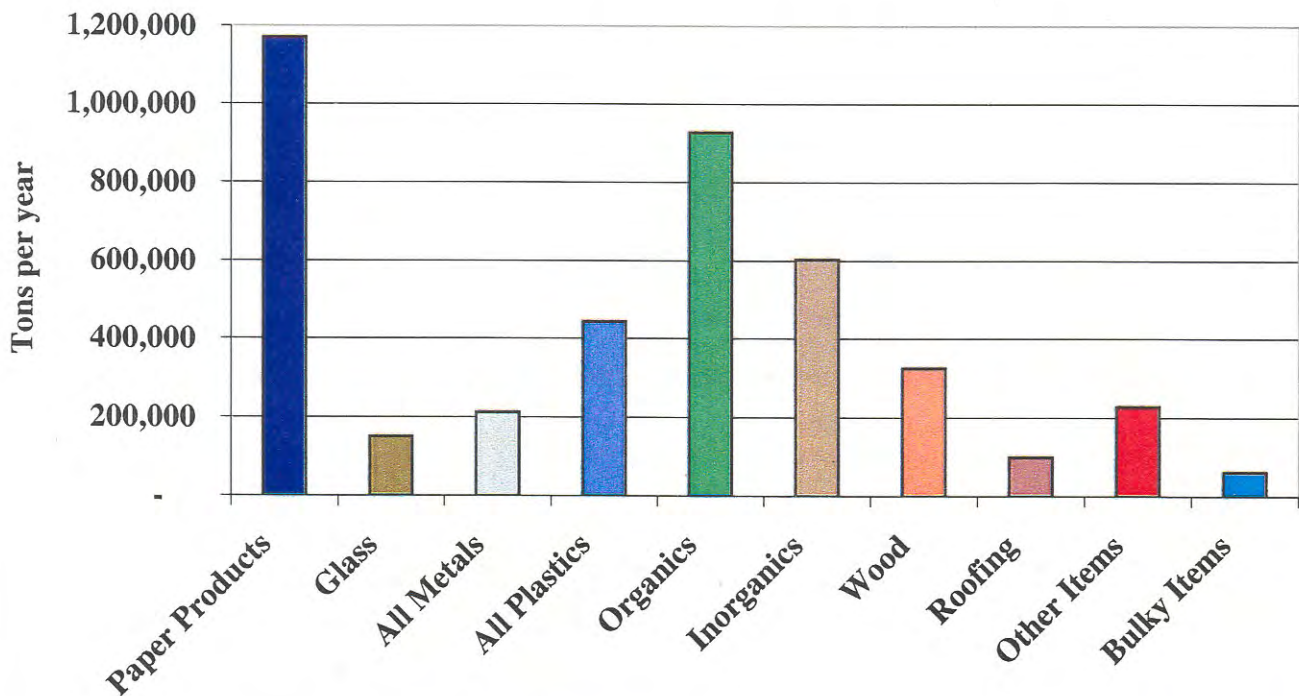


MISSOURI SOLID WASTE COMPONENTS

Materials in the Missouri Solid Waste - 4,488,623 Tons per year



Combined Materials from all Waste Components - 4,488,623 Tons per Year



1999

The State of Garbage
in
Missouri



Missouri Department of Natural Resources
Division of Environmental Quality
Solid Waste Management Program

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In the title of this publication, we recognize that "garbage" is only one fraction of the total waste stream. However, because the term is universally associated with solid waste, we allowed ourselves artistic license.

Introduction

This report examines the status of solid waste management in Missouri and presents a historical overview. It also serves as a snapshot of the current state of solid waste management in Missouri. Additionally, potential policy considerations regarding solid waste management practices in Missouri are described.

Information in this document is the most comprehensive examination of the management of solid waste in Missouri that has been compiled to date.

This report will serve both to inform interested parties and to stimulate discussion as Missouri's solid waste planning process moves into a period of increased coordination with local organizations around the state.

Currently, Missouri is managing its solid waste well. The Department of Natural Resources continually strives to stay abreast of changes in solid waste management issues brought about by public concerns, legislative trends, new technologies and changes in the economy.

One question drives our solid waste planning process: How can we help Missouri citizens, businesses and local governments improve solid waste management to better protect public health and the environment?



A Short History of Solid Waste in Missouri

First attempts at solid waste management began in 1955, when the state passed the County Option Dumping Ground Law. This attempt to regulate solid waste disposal statewide was ineffective because only 22 of Missouri's 114 counties exercised their option of adopting the law.

Solid waste management improved with the Solid Waste Disposal Act, enacted in 1965 as Public Law 89-272 by the U.S. Congress. The act funded a statewide survey of solid waste practices. This survey, conducted from 1968 through 1970 by the Missouri Division of Health, concluded that solid waste management in Missouri was largely unplanned and was causing serious threats to public health and the environment.

The survey located some 2,600 dumps and characterized 457 authorized land disposal sites. Ninety-seven percent of the authorized sites contributed to air, land or water pollution. Almost all sites allowed open burning of waste.

Primarily in response to the findings of the survey, the Missouri Solid Waste Management Law was passed in 1972. The law required local governments to plan and

implement sound solid waste management practices. It also gave them the authority to enact ordinances, collect fees or taxes and enter into contracts necessary for carrying out these responsibilities. By giving the Department of Natural Resources the authority to establish criteria for land disposal, this law essentially outlawed open dumping of waste.

The result was a vast improvement in solid waste



management across the state. By 1975, more than 550 town-operated dumps were closed, replaced by 125 engineered landfills. By 1981, over 400 communities had implemented solid waste management plans addressing storage, collection, transportation and disposal of residential and commercial waste.

The next significant advance in solid waste management occurred in 1986 when Senate Bill 475 amended the Missouri Solid Waste Management Law. These new changes focused on improving resource recovery and solid waste disposal practices. The Environmental Improvement and Energy Resources Authority (EIERA) was required to carry out a study on the quantity of Missouri's solid waste, its composition, management practices and recovery potential. The result of EIERA's efforts was a seven volume report, *Statewide Resource Recovery Feasibility and Planning Study*, published in 1987.

The report included 18 recommended actions for the state of Missouri to increase resource conservation and recovery.



Callaway County 4th graders arrive for a day at Little Dixie Lake to study environmental exhibits and displays. They are getting ideas for their annual poster contest.

The Department of Economic Development was directed to encourage the development and expansion of businesses and industries that provide markets for recycled materials and energy recovered from solid waste.

The State of Missouri Office of Administration was directed to purchase more recycled products, to promote the recycling of paper, oil and other recovered materials. In capital improvement projects, the Office of Administration was directed to consider alternatives that use recycled materials for construction or

that use solid waste for energy production.

Important changes in solid waste disposal included a requirement for all new and active landfills to provide a financial guarantee that all activities necessary to properly close the site would be completed. It required sanitary landfills to provide for monitoring and maintenance of the site for 20 years after closure.

Requirements were made for leachate collection systems, collection of groundwater monitoring data and for landfill operation by state-certified

technicians. To ensure that these new requirements were met, the bill enhanced the Department of Natural Resources' enforcement authority by instituting civil penalties for violations of the Solid Waste Management Law. The department was also empowered to suspend or revoke landfill permits and processing facility permits.

The Solid Waste Management Law was further amended in 1988. These amendments included requirements for infectious waste management and provided for denial of solid waste permits based on the violation history of the applicant. The amendments also defined and allowed less stringent requirements for utility waste landfills and required city or county ordinances to be consistent with their solid waste management plans.

Although the amendments in 1988 did not address waste reduction or recycling, interest in alternatives to disposal was growing. In 1989, then Governor John Ashcroft announced the Missouri Policy on Resource Recovery. This policy directed state and local government to apply the integrated waste management hierarchy to minimize the

environmental impacts of solid waste management and to maximize waste prevention, resource recovery and recycling. A copy of the policy may be found in the Appendix. Following the hierarchy involves the following steps, using each alternative to the greatest extent possible before proceeding to the next:

- Reducing the amount of solid waste that is created
- Reusing, recycling or composting solid waste

- Recovering and using energy from solid waste

- Incinerate or disposing of waste in a sanitary landfill

In 1990, the next major revision of Missouri's Solid Waste Management Law (Senate Bill 530) recognized the importance of the hierarchy and incorporated many of its concepts. To focus the efforts of individuals, businesses, state and local government, a goal was set to divert 40 percent of the waste stream from landfill disposal.



"Solid waste education is primarily an effort to reduce waste through changing attitudes and behavior."

Educational and Informational Materials Developed by the Department

Waste Reduction

Materials Exchange Programs of Missouri Directory

Model Plan Guidelines for Comprehensive Solid Waste Management

Waste Reduction Tips for Businesses

Waste Reduction Tips for Households

Recycling

Missouri Buys Recycled Recycling Economics: Higher Costs are an Illusion

Show-Me State Sets Recycling Precedents

Three R's: Reduce, Reuse and Recycle

Buying Recycled Products: Consuming Wisely

How to Dispose of Christmas Trees

Total Recycling System, Fact Sheet

Composting

Circle Compost Bin

Homeowners' Composting Guide

Wood and Wire Stationary 3-Bin System

Wood and Wire Cage Type Composting Bin

Worm Composting System: Compost Bin Design

Educational Materials

Wild Wood Babes, Adventures in Waste Reduction

Wild Wood Babes, Learn About Reuse

Recycle with the Wild Wood Babes

3 Rs Coloring and activities books for children grades K-3

Quart Jar Worm Farm Design Sheet

Soft-Drink Bottle Hummingbird Feeder

Educational Videos

Talkin' Trash: The Buy-Recycled Loop
Includes Teachers Guide, Grades 4-8

Break It Down: The Compost Connection
Includes Teachers Guide, Grades 4-8

The law created 20 solid waste management districts across the state to foster regional city and county cooperation to help achieve this goal. Regional planning based on the hierarchy was seen as a critical mechanism for change. During the next several years, the districts played a significant role in the development of an infrastructure for recycling.

The revised law levied a landfill tonnage fee to create the Solid Waste Management Fund. It

also designated the fund's distribution for resource recovery grants, reduction of illegal dumps and statewide education and training in solid waste management, among other incentives. Solid waste education is primarily an effort to reduce waste through changing attitudes and behavior.

The law also banned lead acid batteries, major appliances, waste oil, whole automobile tires and yard waste from landfill disposal.

In 1994, Missouri adopted new landfill regulations that required compliance with new federal Subtitle D standards for landfill location restriction, operating and design criteria, groundwater monitoring and corrective action, and closure and postclosure requirements, including financial assurance.

In 1995, the most recent major amendment to Missouri's solid waste management law significantly changed the permitting requirements and



process for solid waste facilities. It requires inspections during closure, post-closure and corrective action plans and changed many provisions of the waste tire law. The provisions include requiring financial assurance for some tire handlers, and revised the law relating to solid waste management plans. The provisions also revised the law relating to the Solid Waste Management Fund and the Solid Waste Advisory Board.

New regulations for permit-exempt and beneficial-use pilot project activities came into effect July 30, 1997. While the new regulations have expanded opportunities for waste reduction and diversion, the beneficial

reuse of some types of solid waste may require more specialized testing, and permits from other programs within DNR or from other agencies.

Some waste types may require site-specific conditions that may prohibit their beneficial reuse. The department will need to provide guidance through technical bulletins or other publications, and streamline the approval process to make the new regulations more effective.

Fly ash, a waste generated in coal powerplants, is usually disposed of in landfills. The department worked with the electric power industry to develop a general set of testing standards and conditions under which fly

ash could be used with minimal departmental oversight. These ground rules can subsequently be applied to almost any fly ash project, speeding the approval process and saving both taxpayers and industry money. This general approach will be

useful for other beneficial reuse projects.

During the spring and summer of 1999, Governor Mel Carnahan signed into law two significant pieces of legislation affecting solid waste management. First, the state's 50-cent per tire fee, collected on each new tire sold in Missouri, was extended to January 1, 2004.

This will enable DNR to continue the cleanup of waste tire dumpsites and encourage the recycling of scrap tire materials. The second piece of legislation will allow concerned citizens to participate earlier and more often in the siting and permitting process for landfills. The process will create opportunities for open communication between the

department, the landfill permit applicant and the residents living near a proposed facility.

Summary

Since the mid-1950s, Missouri has made a transition from unhealthy open dumps to today's engineered, permitted and regulated landfill sites. Integrated solid waste management planning, which recognizes that some "wastes" may actually be resources, is widely practiced throughout the state.

Missouri set its goal to achieve a 40 percent reduction in waste generated for disposal by January 1998. See the chapter, *What's NOT in the Trash Can*, to read more about this goal.



Solid Waste Management Program displays explain the work of the program to citizens at an Earth Day celebration at Whiteman Air Force Base.

What's in the Trash Can?

To evaluate previous efforts and formulate future waste management strategies, a study of the composition and quantity of solid waste is essential. Each year the department estimates the quantity of waste generated and the amount landfilled. By 1998, Missourians were generating close to eight million tons of solid waste

annually. The next chapter will discuss this evaluation further.

An understanding of the components of the waste stream enables decision makers to set priorities and focus resources.

One factor that must be considered is the source or type of generator of the waste stream. Although hard data has not been compiled, the chart

below provides one estimate of the relative proportions of the major waste streams in Missouri. Two studies have been conducted which look at the municipal solid waste (MSW) stream's piece of the pie, which includes residential and commercial waste.

The Statewide Resource Recovery Feasibility and Planning Study completed in

Figure 1



Table 1

Missouri Solid Waste Composition

MATERIAL CATEGORY	1987	1996-7
	EIERA Study	M.A.P. Study
	Percent by Weight	Percent by Weight
Cardboard	15.3%	6.7%
Newsprint	6.6%	7.9%
Magazines	1.7%	3.7%
High Grade (office) Paper	3.0%	3.6%
Mixed Paper	12.7%	15.5%
PAPER TOTALS	39.3%	37.3%
Clear Glass	3.0%	3.2%
Brown or Amber Glass	0.8%	1.5%
Green Glass	0.7%	0.4%
Other Glass	N/A	0.6%
GLASS TOTALS	4.5%	5.8%
Aluminum Beverage Cans	1.0%	1.5%
Other Aluminum	0.5%	0.8%
Other Non-ferrous	0.1%	0.2%
Steel (Ferrous) Food Cans	2.0%	3.1%
Other Ferrous	3.4%	1.1%
Oil Filters	N/A	0.1%
METAL TOTALS	7.0%	6.9%
PET #1 (primarily plastic beverage containers)	0.3%	1.7%
HDPE # 2 (primarily plastic milk jugs)	0.4%	2.1%
Plastic Film or Wrap	N/A	3.7%
Other Plastic	7.0%	6.9%
PLASTIC TOTALS	7.7%	14.4%
Food Waste	8.3%	18.7%
Yard Waste	8.3%	N/A
Other Wood Waste	N/A	0.8%
Textiles	3.9%	4.0%
Diapers	1.5%	4.2%
Other Organics	12.2%	3.2%
ORGANIC TOTALS	34.2%	30.8%
Fines	2.9%	3.3%
Other Inorganics	3.4%	1.5%
INORGANIC TOTALS	6.3%	4.8%
TOTAL	*99.0%	100.0%

* does not sum to 100 percent due to rounding

Source: Statewide Resource Recovery Feasibility and Planning Study, Volume II Solid Waste Characterization Report, December 1987, Environmental Improvement and Energy Resources

Authority: and The Missouri Waste Composition Study, 1997, Midwest Assistance Program



Recyclables are hand sorted at Civic Recycling in Columbia.

1987 by EIERA included an examination of the municipal solid waste streams at four landfills. A summary of the results of this study are shown in Table 1. This data contributed to the development of recommendations in the study.

The percentage of yard waste, coupled with the fact that this material could be easily source separated, indicated the potential for diverting this material from landfills. The high percentage of cardboard revealed that the commercial sector could play an important role in waste diversion. The data from this study also became an important component of the *1991 Model Plan Guidelines for*

Comprehensive Solid Waste Management, developed by the department's Solid Waste Management Program.

During 1996 and 1997, the Missouri Waste Composition Study was conducted by the Midwest Assistance Program (MAP). This study, funded through a statewide DNR project grant, focused on the composition of and changes in the MSW stream. Samples of MSW were taken from waste haulers at landfills or transfer stations in 19 of the 20 Missouri Solid Waste Management Districts. Although the methodology used was somewhat different than that employed by the 1987 EIERA study, the results from each can be compared Table 1.

The MSW portion of the total waste stream usually gets the most attention. However, industrial process waste and wastes generated by construction and demolition activities together make up approximately 43 percent of the total waste stream. These types of waste have great potential for reduction, reuse and recycling.

The 1987 Statewide Resource Recovery Feasibility and Planning Study quantified the amount of industrial waste generated in the state using a statistical model based on employment data. This study did not attempt to determine the composition of the industrial waste stream. More data will be available when a current study by MAP, funded by a DNR project grant, is completed. In the MAP study, industrial, construction and demolition wastes will be examined at landfills to better understand the types of waste and their relative quantities.

What are some insights that can be gained by studying the waste stream?

The Missouri Waste Composition Study was able to draw several conclusions, summarized here:

1. The Missouri MSW stream has changed significantly over the past 10 years.

Two seasonal waste sorts at four Missouri landfills indicate a significant increase in plastics. This increase is due in large part to containers and packaging, especially plastic materials PET and HDPE. There has also been a large increase in food wastes, increasing from 8.3 percent in 1987 to 18.7 percent in 1996.

On the positive side, there was a dramatic decrease in the amount of other organics such as yard waste in the MSW stream. The amount of these carbon-based materials fell from more than 21 percent in 1987 to 3.2 percent in 1990, thanks largely to the yard waste ban in 1990's Senate Bill 530.

2. There is very little volume change in the MSW stream from one season to the next.

With the possible exception of the holiday season, it appears that the composition of the MSW stream remains constant throughout the year.

3. There are some local factors that affect changes in the MSW stream throughout Missouri.

On the whole, the composition of the MSW stream remains fairly constant from one area of the state to another. However, there are some local factors that seem to affect it. Metropolitan areas tend to have a much higher percentage of newsprint and "other organics." Tourist areas have higher concentrations of glass, aluminum beverage cans and plastics.

4. Recycling programs that provide economic incentives have a definite effect on the MSW stream.

Recycling programs vary greatly from one area to another, and the effects on those waste streams also vary. However, some communities have been particularly successful. For example, the City of Maryville diverts approximately 12 percent of its total waste stream through recycling alone. A probable reason for this success is that the city-owned landfill does not charge haulers to accept recyclable materials.

The City of Chillicothe has had similar success by using a unit-based pricing system, offering curbside recycling as an incentive to reduce disposal costs.

The City of Columbia uniquely offers yet another method intended to encourage recycling, a beverage container deposit ordinance.

Considerably less glass, PET and aluminum can be found in Columbia's waste stream as a result of this law, designed to encourage the return of used beverage containers.

5. There are economic opportunities available in recycling a portion of the MSW stream.

Approximately 37 percent of the materials in the MSW stream are economically feasible to recycle. Recycling all these materials would generate an estimated \$137 million per year. However, the actual benefit would exceed \$160 million per year, since \$36 million would be avoided in landfill tipping fees (figures based on the 1997 market).

Other benefits of an increase in recycling include conserving natural resources, reducing the energy costs in the production of goods, extending the life span of landfills, and providing employment opportunities in the recovered materials industry.

What's NOT in the Trash Can?

Missouri Waste Reduction Efforts

To evaluate Missouri's progress in reducing waste, the department's Solid Waste Management Program strives to obtain the most accurate data on waste reduction possible. The method for tracking waste reduction has evolved over time, but the program's current method of

tracking still uses 1990 as the base year for measurement. In accordance with the goal set in 1990, DNR estimated Missouri's waste disposal for base year 1990. The base year estimate concluded that 6.8 million tons of solid waste was sent to landfills for disposal in 1990. That is 2,660 pounds per

person per year, or 7.3 pounds per person per day.

Since October 1990, Missouri waste disposal facilities have been required by law to report the amount of waste they receive on a quarterly basis. These tonnage reports include in-state waste disposal and waste that is

Table 2

Annual Waste Generation, Disposal & Diversion

Figures in Tons	1990	1991	1992	1993	1994	1995	1996	1997
Solid Waste Generated in Missouri	7,540,000	7,581,535	7,634,992	7,699,664	7,763,482	7,660,801	7,896,025	7,941,025
Solid Waste Landfill Disposal	6,800,000	6,442,395	5,797,644	5,623,663	5,852,177	5,701,225	5,330,733	5,528,563
Annual Per Capita Disposal	1.33	1.25	1.12	1.07	1.10	1.07	0.99	1.02
Solid Waste Diverted	754,000	1,139,140	1,837,348	2,076,001	1,911,305	1,959,576	2,565,292	2,412,462
Percent of Solid Waste Diverted	10%	15%	24%	27%	25%	26%	33%	30%

Figure 2

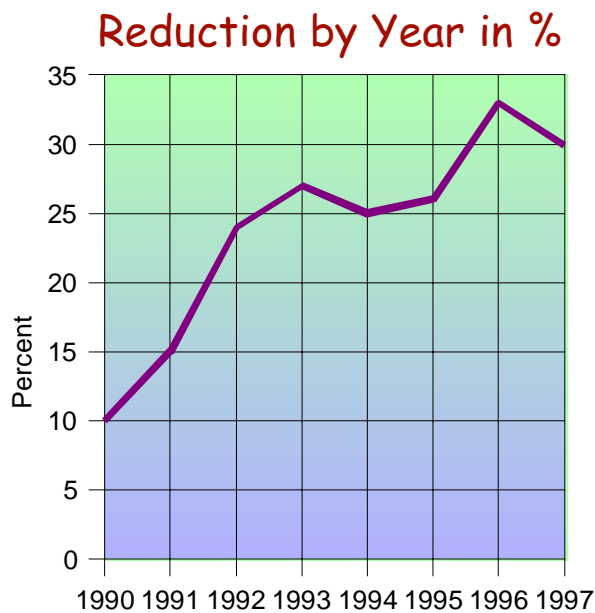


Table 2. These numbers include industrial and commercial waste disposal.

The latest survey conducted by the department's Solid Waste Management Program indicates that the amount of solid waste going to landfills in 1997 was reduced by 30 percent

exported out of state through transfer stations.

Waste hauled across state lines without going through a transfer station is estimated by phone survey of landfills in the states bordering Missouri. The department's Solid Waste Management Program uses disposal totals calculated from the sum of the tonnage report and the export survey.

To control for population changes, census projections from the Office of Administration, Division of Budget and Planning, were used to determine per person disposal rates for each year. This calculation yielded the yearly total solid waste disposal adjusted for population shown in

since 1990. Waste reduction percentages for all years from 1990 through 1997 are noted in Figure 2.

Historically this number has fluctuated due to a variety of factors, including enactment of legislation, market demand for recovered material, landfill closures and import/export trends. The 1997 reduction estimate shows a 3 percent drop from the 33 percent figure calculated for 1996. However, per-capita disposal is shown to have decreased significantly since 1990 in Figure 3.

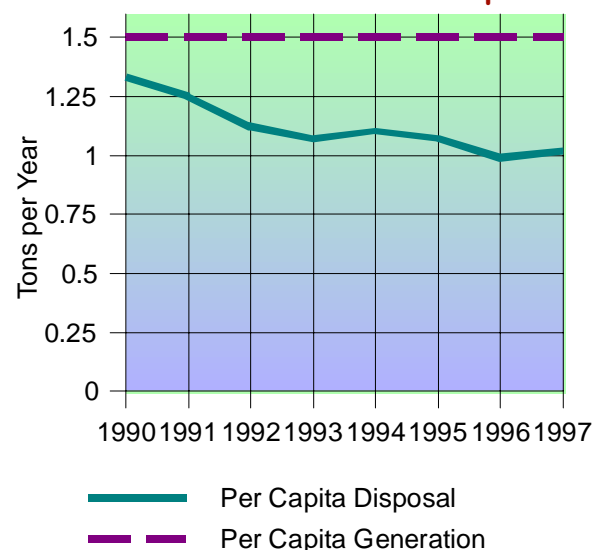
In 1990, per person solid waste disposal

was 2,660 pounds per year. By the end of calendar year 1997, per person solid waste disposal was 2,040 pounds per year, a reduction of 620 pounds per person per year.

Factors that have had an effect on the waste reduction rate include a robust period of economic activity and the constant per-capita generation rate. A constant generation rate was decided on in 1990 as a standard to measure annual reduction progress. While this has been useful for purposes of calculating reduction rates, it is presumable that the generation rate fluctuates with the prevailing economic climate.

Although the 40 percent waste reduction goal has not yet been

Figure 3
Generation vs. Disposal



achieved, Missouri's goal to maximize waste reduction is ongoing. DNR promotes an integrated approach to solid waste management using a combination of alternatives.

These alternatives are discussed in the following chapter.



Bales of corrugated recycled cardboard being prepared for shipping.



Drop-off collection center in Kirkwood.



Integrated Solid Waste Management

While the focus from the 1950's to the late 1980's was on safe collection and disposal, the 1990's has seen a shift to reducing the amount of waste generated and using alternatives to disposal.

As discussed in the chapter *A Short History of Solid Waste*, a policy of applying the integrated waste management hierarchy was adopted in 1989 and influenced the legislation passed in 1990. This approach would enable Missourians to

- minimize the amount of solid waste that requires disposal,
- reduce environmental and public health threats,
- increase the manufacture and use of products made from recycled materials, and
- preserve our natural resources.

Integrated waste management means managing waste by a combination of methods that include waste reduction, materials reuse, recycling, composting, incineration with



energy recovery and landfilling. These alternatives are arranged in a hierarchy that maximizes waste reduction and resource recovery and uses incineration and landfilling only as needed for those wastes that cannot be feasibly recovered.

Efforts to prevent the generation of waste should precede other waste management options that deal with the waste after it is generated, as in recycling. The underlying thought is that **solid waste that is not produced does not require management.**

The next level of the hierarchy includes reuse, recycling and composting. These techniques require a greater input of resources to implement, but have the potential to divert large amounts of waste from disposal. Through these techniques, waste materials can potentially go through several cycles of use.

Energy recovery, the next level of the hierarchy, also uses waste as a resource, but essentially the material can only be used once. Finally, the residual waste stream must be properly managed through incineration or landfilling at a permitted facility.



Modern sanitary landfills are designed to help protect Missouri's groundwater.

To assist cities, counties and solid waste management districts in planning local solid waste systems that use the integrated approach, the department developed and distributed the *Model Plan Guidelines for Comprehensive Solid Waste Management* in 1991.

The *Model Plan* guides planners through a process which emphasizes public participation in setting goals for diverting waste and the use of proper disposal methods. This guidance includes

- methods for evaluating the types and amounts of waste generated,
- options for managing recyclables and yard waste,

- local recycling market development,
- management of materials banned from disposal, such as used oil and major appliances,
- options for financing new services, and
- the Missouri statutory and regulatory framework for solid waste planning.

During 1993 and 1994, plans were submitted by each of the 20 solid waste management districts, guided by the *Model Plan*. In 1996, to assess the progress in developing integrated solid waste management systems in each district, the program worked with the districts to create a survey.

The districts then inventoried each of their member cities and counties about the services available and needed for managing solid waste. Each survey, usually referred to as the assessment inventory, addressed solid waste collection, recycling, yard waste management, and services for banned items.

Several goals were accomplished by the inventories.

- Lists were compiled of available services to answer citizen inquiries,
- gaps in services for some areas were indicated,
- achievements since the passage of SB 530 were highlighted and
- information was made available to help develop targets for grant funding and to assist planning efforts at both the state and local level.

The districts were required to revise the inventories in 1998, which will continue to help in planning local and state programs.

With the information from the 600 communities surveyed in the 1996 assessment inventories and other departmental sources, the



Recycling collection center in Columbia

following sections discuss each waste management alternative and information that is available about the current use of each method.

Waste Reduction

Waste reduction, or prevention, may include changing a product design, making consumer goods repairable and more durable, and/or changing processing methods and consumer behavior and buying habits.

Waste reduction can be measured by examining our waste generation rates. Factors which contribute to our generation rate include excessive packaging, the elimination of most refillable containers, tax incentives

favoring virgin materials, a throwaway approach to goods consumption and a scarcity of goods that can be repaired instead of having to be discarded. To reduce the amount of waste generated, programs must be developed and implemented that will cause changes in consumer habits and business practices.

Public information campaigns and educational programs can encourage purchasing products with the least amount of packaging necessary for safe product delivery, repairing durable goods instead of replacing them and bulk purchasing.

It is difficult to quantify the amount of waste reduction

being practiced today. There are programs implemented by the department and the solid waste management districts which, when successful, do result in a reduction in the generation of waste. One particularly effective technique which increases waste reduction, as well as reuse, recycling and composting, is unit-based pricing.

This technique, also called “pay-as-you-throw,” refers to a solid waste collection system that bases the collection fee on the amount of waste set out

for disposal. Each customer has an economic incentive to reduce their generation of waste or divert more materials to recycling and composting operations. According to a recent survey by the Midwest Assistance Program, in 1995 five communities in Missouri were using unit-based pricing for residential waste disposal.

The department promotes this technique through the distribution of guidance materials, sponsoring workshops and providing grant funding for local

implementation. To date, two statewide waste recovery and recycling grants have funded “pay-as-you-throw” projects.

Reuse

This method of waste management involves reuse of potential waste materials. Examples of reuse are a family that saves margarine tubs to store leftover food, uses old clothes as batting to stuff handmade Christmas toys, donates used consumer goods to charity or buys beverages in returnable bottles.



Another type of reuse takes place in thrift shops and secondhand furniture stores. Reuse keeps materials out of the waste stream with very little environmental impact since no re-manufacturing is involved.

Many consumer goods, such as clothes, toys, appliances and housewares can be easily reused. This is done by finding a new purpose for the item in the home, or by selling or donating items in the community. Businesses and government offices often practice reuse, but may find that they have more discards than they can reuse internally.

Missouri has several materials exchange programs that accept potential waste materials (old computers, production scrap, carpet samples, overruns) from businesses, industry and households for reuse in other businesses, non-profits or in classrooms. Since these programs do not have any requirement to report information to DNR, it is difficult to maintain a comprehensive list. The following list represents the material exchange programs which are known by the department:

- *The Surplus Exchange* - Kansas City
- *The Learning Exchange* - Kansas City
- *Refunction Junction* - Joplin
- *Computers to Crayons* - St. Joseph
- *ETC.* - Springfield
- *Corporate Closet* - Jefferson City
- *Resource Recovery Project* - St. Charles
- *St. Louis Teacher's Recycle Center* - St. Louis

Industrial process wastes may also be suitable for reuse. A materials exchange program can be used to link business, office and industrial wastes with entities that can reuse them.

Missouri participates in the Industrial Materials Exchange Service that is sponsored by the Illinois Environmental Protection Agency and the Illinois State Chamber of Commerce. This service attempts to match companies having materials for which they no longer have use with companies seeking raw materials. A typical edition of their directory will list inorganic chemicals, plastic,

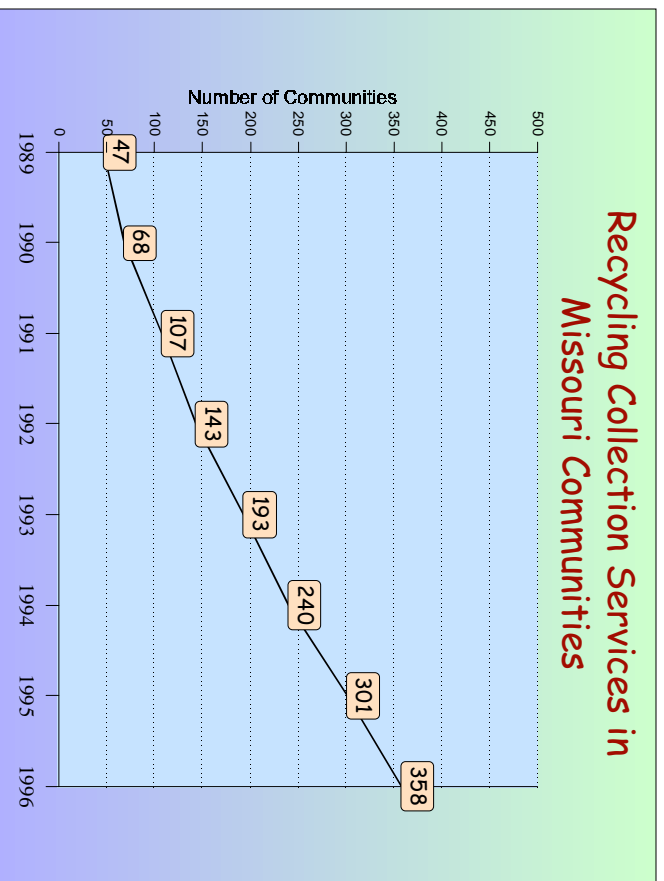
rubber, textiles, wood, paper and metals. The Environmental Improvement and Energy Resources Authority (EIARA) distributes the directory in Missouri.

Reuse of items at work and at home is actively promoted by the department through informational materials, public displays, solid waste planning guidance and other outreach activities. Grants at the state or solid waste district level may be available to fund certain reuse activities.

Recycling

Although waste reduction is at the top of the hierarchy model, today's products, lifestyles and business practices will continue to cause a great deal of material to be generated at home, work or leisure. Recycling is the waste management option that generally diverts the greatest amount of material from the waste stream. The development of a viable recycling infrastructure across the state involves a combination of collection, processing, marketing and sales of recycled products. The benefits of recycling can go beyond the environmental impact to an

Figure 4



economic one that includes the creation of new businesses and jobs.

In some parts of the country, landfill costs have risen to such high levels that recycling is a cost effective management alternative. In Missouri, as in its neighboring states, landfill costs have not risen as significantly, making it more critical to use careful planning to create sustainable programs. For some materials, both the distance to markets and fluctuations of the markets make recycling a risky venture. However, we have made progress and continue to increase recycling opportunities across the state. The number of communities with access to recycling services has risen

from 47 in 1989 to 358 in 1996 as seen in Figure 4.

These programs made a substantial contribution to the 1997 diversion rate of 30 percent, discussed in Chapter 4.

This progress has been achieved by efforts at all levels - individual citizens, local and state government, solid waste districts, large and small businesses, public institutions and not-for-profit entities. As described in Chapter 2, legislation and policy has enabled the department to promote and support recycling by

- the creation of solid waste management districts to help cities and counties work cooperatively in the

development of local recycling services,

- requiring that solid waste district plans address recycling services for both rural and urban communities,
- creating and distributing planning guidance and informational and educational materials that relate to recycling,
- minimizing regulatory requirements for recycling facilities,

- providing grant funds to assist in developing the infrastructure for collection and processing of recyclables and organics,
- developing markets for recyclables to help develop a sustainable infrastructure, and
- providing technical assistance to public and private sectors.

Recycling Collection Services

A major determining factor in the success of a recycling program is the type of collection provided to the public sector. Two types of collection are curbside and drop-off. Of the 600 communities surveyed, 358 communities that have recycling services, 198 include



The 1999 annual Missouri Recycling Association Conference was held in St. Louis.

curbside collection. The curbside service is operated by the municipality in 32 cities. Another 94 communities contract with private haulers to provide curbside service. The remaining communities are served by 194 private haulers, nine non-profits, and one solid waste management district.

Drop-off services also range from public to private. Of the 253 communities with drop-off recycling, 102 are operated by municipalities and 13 by counties. In 35 cities, the local government contracts with a private business to operate the service. Drop-off collection sites are also provided by 174

private businesses, 51 non-profits and one district.

Many of the recycling services in Missouri manage source separated recyclables. Over half of the curbside programs use a type of commingled collection, in which several types of recyclables may be placed in the same bin or bag for pick up. Since these commingled recyclables are kept separate from mixed solid wastes, they can be easily sorted at a recycling center for processing and transport.

In Missouri, a facility which accepts recyclables that are mixed with other solid wastes at the point of generation requires a solid waste

processing permit. Recyclables separated at a facility usually have some contamination making them more difficult to market, especially in competition with clean, source-separated recyclables.

The City of St. Peters obtained a permit to operate this type of facility, usually called a materials recovery facility. They keep contamination to a minimum by requiring that recyclables be placed in plastic bags, provided by the city, prior to being collected with mixed wastes. At the material recovery facility the bags of recyclables are separated from the mixed wastes before entering the sort line.

Recognition of the importance of government leadership in promoting recycling led to the establishment of the State Recycling Program in 1989. This program is administered by the Office of Administration (OA). Program oversight is the responsibility of the OA state recycling coordinator.

The 1989 legislation required each executive agency of state government to develop a plan for recycling that would include collection of paper and other recyclables generated in state offices. Since the legislation



Aluminum can crushing and bailing at a recycling facility.

did not provide funding or staff for each agency's efforts, an interagency committee was formed.

By working with the committee, the state recycling coordinator can more easily disseminate information about the collection program, track the program's progress, conduct special events and receive input from the various agencies.

Paper products make up the most significant fraction of recyclables generated in government offices. From 1992 through fiscal year 1997, 2,026 tons of office paper was collected in the central Missouri state offices. The reporting for fiscal year 1998 included the accomplishments of state offices throughout the state, resulting in a total of

1,581 tons of recovered materials. This figure included cardboard, aluminum cans, newsprint, telephone books, scrap metals and toner cartridges.

Additionally, over 76,000 gallons of motor oil and other automotive fluids were recovered. Several agencies recycled tires, batteries, fluorescent bulbs, pallets and video cassette tapes. Food waste composting has been implemented in one of the DNR office buildings. The Department of Transportation received the 1998 OA Annual Recycling Award for initiating procedures to recycle lead paint waste removed during bridge repainting operations.

The OA, in cooperation with the EIERA, produces an annual

report providing more detail on the progress of this collection program.

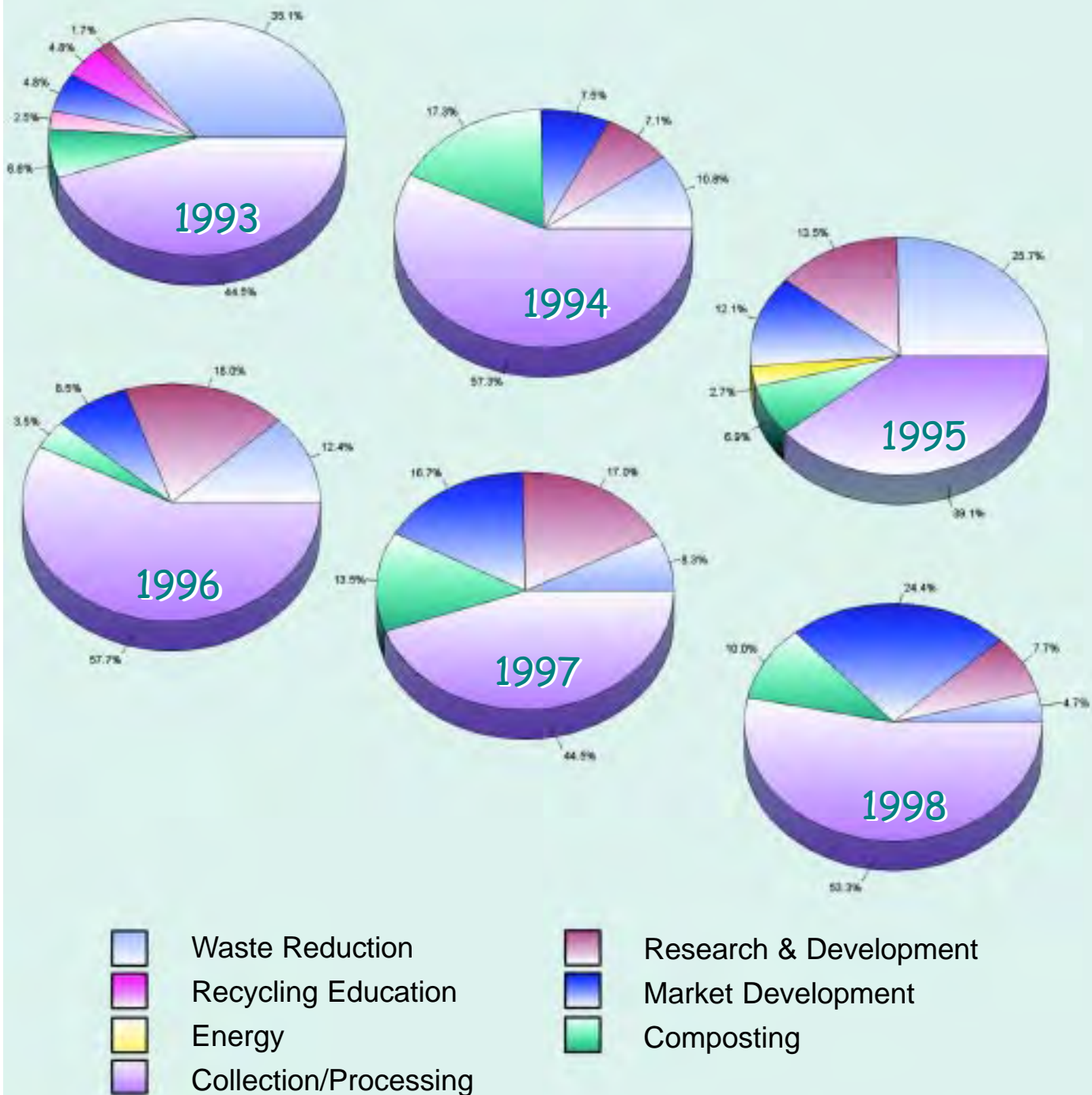
Recycling Market Development

The Solid Waste Management Fund has contributed to the development of all components of the total recycling process. Figure 5 provides a breakdown of the types of recycling project grants that have been awarded through the Waste Reduction and Recycling Projects. Additionally, a portion of the Fund is set aside each year specifically for market development, administered by EIERA's Market Development Program, in cooperation with DNR and the Department of Economic Development.

The Market Development Program has used these funds to provide direct financial assistance and technical assistance to manufacturers of recycled products, to research and track recycling markets and to promote purchasing of recycled products. Part of this effort resulted in the Missouri Buys Recycled Initiative, a partnership between the public and private sectors to encourage businesses to buy products such as asphalt, office and computer paper, furniture

Figure 5

Waste Reduction & Recycling Projects Grant Funds Distributed 1993-1998





and plastic lumber made from recycled materials.

Procurement of recycled products by state government agencies has also been an integral part of supporting market development. Since 1990, purchases of recycled paper products have grown from a little over \$2 million to more than \$7.9 million in fiscal year 1997. While this exceeded the 40 percent statutory goal for paper products, other factors have limited improvements in other recycled product purchases reported for the last two years.

Changes in purchasing policies and procedures have made it more difficult to capture the total amount spent on these items. Many products produced using recycled materials do not compete in price with products manufactured from virgin materials, which are produced

at greater economies of scale and may benefit from government subsidies.

The OA state recycling coordinator is committed to improving the tracking of recycled content purchases, and increasing both the amount and diversity of these purchases.

To encourage and support using recycled content newsprint in publishing Missouri newspapers, legislation established a recycled content usage goal in 1990. Beginning with a goal to use 10 percent recycled content newsprint in 1993, the percentage gradually increases to 50 percent in the year 2000.

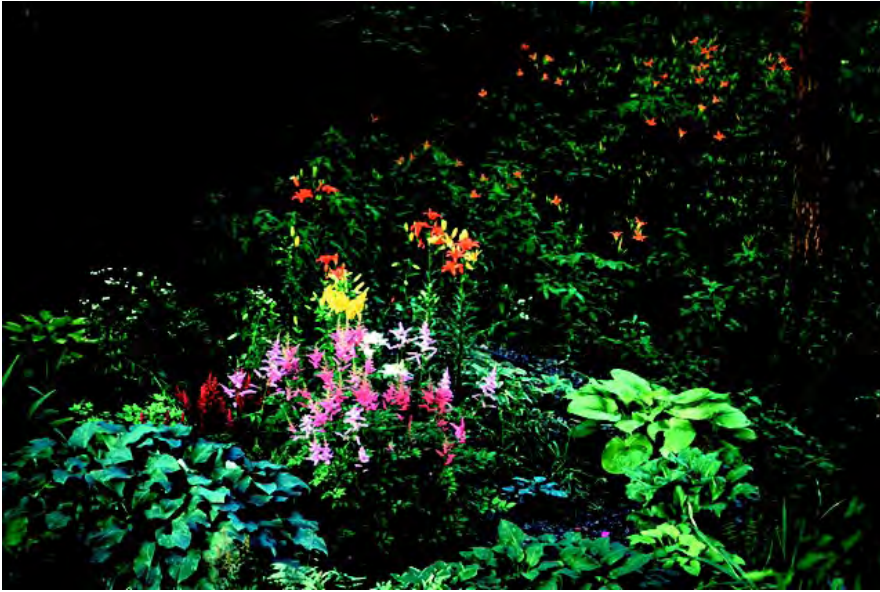
The most recent reports from newspapers across the state showed that they had achieved the target for 1998, using an average of 40 percent recycled content newsprint. Several

major Missouri newspapers reported recycled content usage of over 50 percent. In 1998 alone, the combined efforts of Missouri publishers resulted in diverting nearly 77,000 tons of paper from disposal.

Composting

Composting is the process of decomposing organic wastes such as grass, sawdust, wood chips and vegetable waste by microorganisms. The materials are broken down into simpler and more stable compounds such as water and carbon dioxide. The process occurs naturally and can be accelerated by mechanical digestion, by grinding wastes into smaller particles, and by maintaining optimum temperatures, oxygen levels, nutrients and moisture in the compost.

As a waste management alternative, composting may be done on site by the homeowner or by a municipality, county or region at a central facility. Composting makes a valuable product from a potential waste. With the appropriate department permits, composting may also be used as a volume reduction technique for solid waste.



Yard Waste

In Missouri, the majority of composting activities address yard waste, which is banned from disposal in landfills. Many of the same policies used to promote recycling are employed in promoting composting and mulching techniques. The solid waste management districts reported that citizens of 271 communities had access to yard waste management options in 1996 as seen in Figure 6. Although the 1992 yard waste disposal ban stimulated growth in composting programs, in many parts of the state, open burning is the current management method for yard wastes.

In 230 communities, yard waste is collected curbside. In two counties and 78 cities this service is provided by the local government. In 79

communities, the local government contracts with private haulers for service. The remaining communities are served by 71 private haulers. Drop-off yard waste services are operated by 120 cities and 26 counties. Four communities contract for drop-off service. In addition to the contracted

services, there are 15 private drop-off facilities.

To minimize the need for centralized composting, backyard composting has been promoted by the department and many local programs.

Other Organics

Composting can also be utilized to manage other organic components of the waste stream. Homeowners, businesses and institutions are encouraged to use on-site composting to manage the food wastes they generate. The department also encourages large scale composting of food wastes, paper, biosolids and some animal wastes. Recent changes to the regulations for solid waste processing facilities



Photo by Dennis Hansen

This covered compost bin shows that waste management alternatives don't have to be unattractive.

Figure 6



provide some permit exemptions for composting these materials.

There has been minimal interest in Missouri for biosolids composting (composting sewage sludge or co-composting sewage sludge with other organics). This management option is being considered as land available for direct application decreases. The department's Water Pollution Control Program designates application rates and site specifications.

If proper design and operation standards are followed, biosolids can be co-composted with yard waste and other organic waste streams to create a usable soil amendment. The

City of Nixa in southwest Missouri recently began co-composting biosolids with their yard waste. If successful, this operation could lead other

communities in the same direction.

Although there has been some interest in food waste composting, the majority of implemented programs have been small-scale, such as the placement of worm bins in schools or offices. One solid waste processing permit has been issued for a composting operation for fruit and vegetable wastes, but the facility has not yet been constructed.

A small number of facilities that compost the entire solid waste stream are in operation in the United States. This process, generally called municipal solid waste



A method of composting called vermi-composting uses a type of earthworm. The worms process food wastes and produce castings, a valuable soil enhancing by-product.



This Union Electric Power Plant uses scrap tire chips as part of its fuel, replacing a portion of coal burned.

Photo courtesy of Union Electric

used pelletized paper waste in their boilers to produce heat. Waste tires provide another potential energy source as well.

Waste Disposal

When alternatives that divert solid waste from disposal are maximized, the remaining fraction of the waste stream requires proper management. The following sections look at disposal methods and how they are utilized in Missouri.

composting, requires a processing facility permit in Missouri. To date, no permit applications have been received for this type of facility.

Design and operation costs for municipal solid waste composting facilities may require higher tipping fees than currently charged at Missouri landfills. In some cases, problems occur in marketing the compost produced at these facilities due to contaminants, such as glass, plastic or metals. This compost may also contain concentrations of heavy metals and other substances since household hazardous waste is a fraction of the municipal solid waste stream.

Energy Recovery

Energy recovery, sometimes called waste-to-energy follows waste reduction, reuse, recycling and composting in the hierarchy of waste management options. Increases in landfilling costs, coupled with higher costs for fossil fuels, have made energy recovery from solid waste more feasible in some parts of the country. In addition to producing energy, waste-to-energy plants reduce the volume of waste left for disposal.

Missouri has no permitted public incinerators that use mixed waste from residential and commercial sources for fuel. A number of universities and small communities have

Incineration without Energy Recovery

In some parts of the country, incineration has been used to reduce the volume and putrescibility of the waste stream, but energy is not recovered in the process. This type of incineration usually takes place in older burn units that were designed and built prior to the energy shortages in the 1970s and environmental concerns. Incineration is less desirable than energy recovery because the potential energy resources of the incinerated material are lost.

Concerns about incineration as a waste management tool usually focus on potential air emissions, high startup and operating costs, proper disposal

of the incinerator residue and the composition and consistency of the incoming waste stream.

Landfills

In Missouri, engineered landfills are the final resting place for approximately 70 percent of the solid waste generated. Solid waste landfill types in Missouri include sanitary, demolition, special waste and utility waste.

Sanitary landfills are permitted to accept solid wastes resulting from industrial, commercial, agricultural and residential activities. Laws and regulations further define waste types that may be

accepted, as well as those that may not, such as regulated hazardous wastes.

Demolition landfills may accept only those wastes listed in the regulations, generally including solid wastes generated by construction, remodeling, repairing or demolishing buildings, streets, bridges and other structures.

Special waste landfills typically are located on the site of a manufacturing operation to manage a uniform waste stream generated in the manufacturing process.

Utility waste landfills are used for ash and other wastes generated primarily

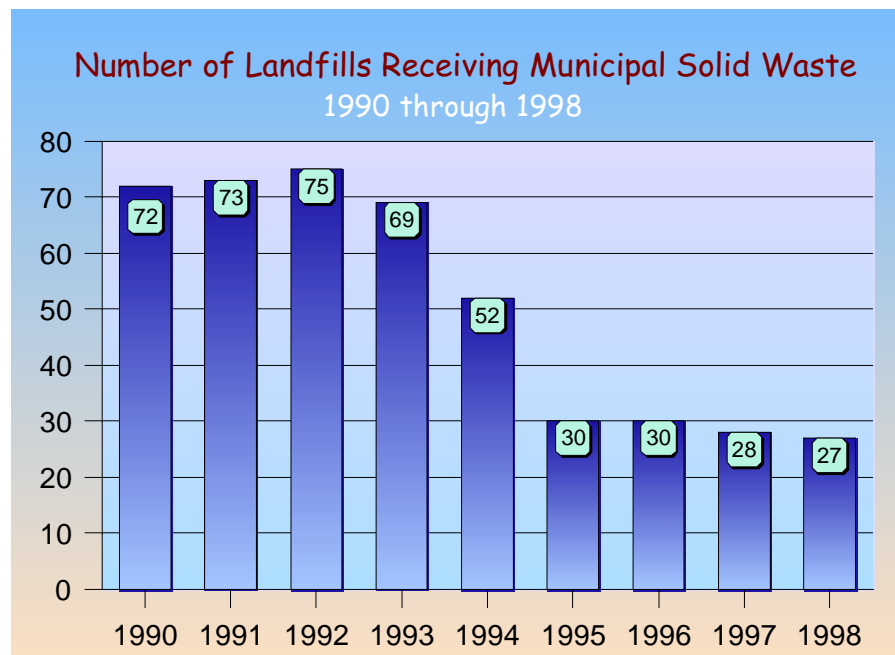
from the combustion of coal at power plants.

Sanitary Landfills

The number of permitted sanitary landfills has steadily declined since 1992 as seen in Figure 7. Changes in federal regulations, commonly referred to as Subtitle D, prompted the rapid decline seen in 1994 and 1995. These regulations greatly reduce the possibility that landfills will become sources of pollution. At the same time, the new design and operational requirements prompted many landfills to re-evaluate the costs of doing business. In Missouri, this resulted in the closing of many small, often publicly owned landfills.

The majority of sanitary landfills currently operating in the state are privately owned. Pages 38 and 39 in the Appendix provide a map and a list of the sanitary landfills that are currently active. Although annual tonnages for each facility can fluctuate due to changes in waste flows and contractual agreements, they are provided to give a picture of the relative sizes of the each landfill's waste handling activities.

Figure 7



Demolition Landfills

Currently, there are four permitted demolition landfills in Missouri. They are listed in Table 4 in the Appendix.

Relative to sanitary landfills, demolition landfills handle a small amount of the state's solid waste. The landfill at A.P. Green Refractories accepts only the off-specification wastes generated in the plant's manufacture of refractory brick. The three remaining demolition landfills were constructed to accept construction and demolition wastes from local businesses and the general public.

Transfer Stations

As the number of landfills declined, the number of transfer stations rose, as shown in Figure 8. Transfer stations are facilities where several solid waste collection vehicles (pumper trucks) unload their refuse, which is then loaded onto a larger vehicle for hauling.

In Missouri, these facilities require a solid waste processing permit. With landfills fewer and farther apart, transfer of the waste to larger trucks designed for more efficient operation over long hauls reduces costs. Transfer stations

may also have a positive impact on landfill operation. Less traffic in and out of the facility and reduced on site congestion of collection vehicles can be expected.

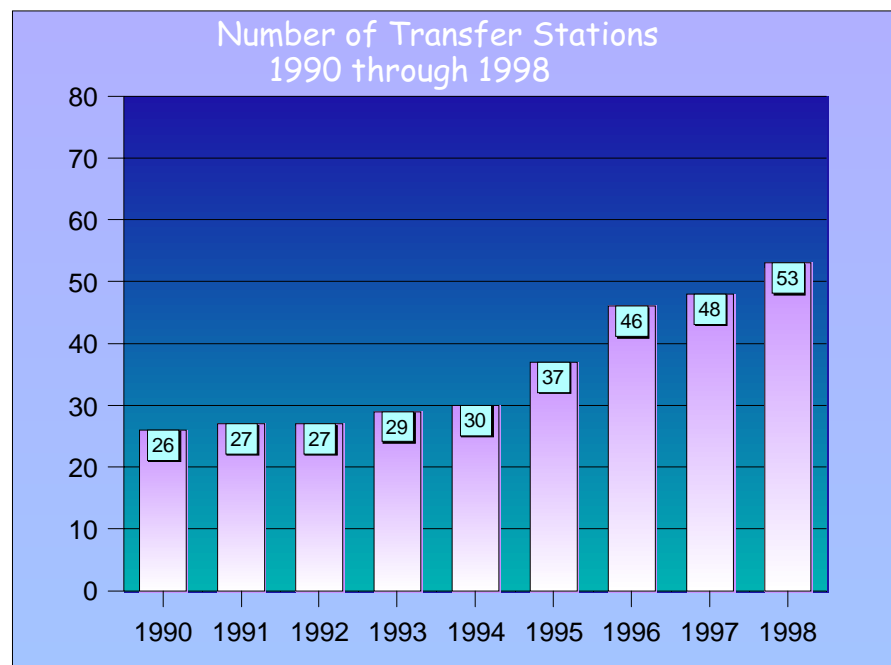
Table 7 in the Appendix lists the permitted transfer stations currently operating in Missouri. The majority of the 47 facilities are privately owned. Cities or counties own 14 of the facilities.

private hauling services.

Information on the services for residential solid waste collection in 515 communities is available from the 1996 assessment inventories.

Of these, 50 cities operate the solid waste collection routes. Another 270 communities provide service through contracts with private haulers. In the remaining 124 communities, services are provided by private haulers. This includes 58 cities which

Figure 8



Solid Waste Collection

What about the trip to the landfill? In Missouri, the type of service varies from municipal waste collection to free market

are each served by one hauler and 26 that are served by two haulers. The remaining 40 communities are served by three or more private haulers.



Missouri's Next Step

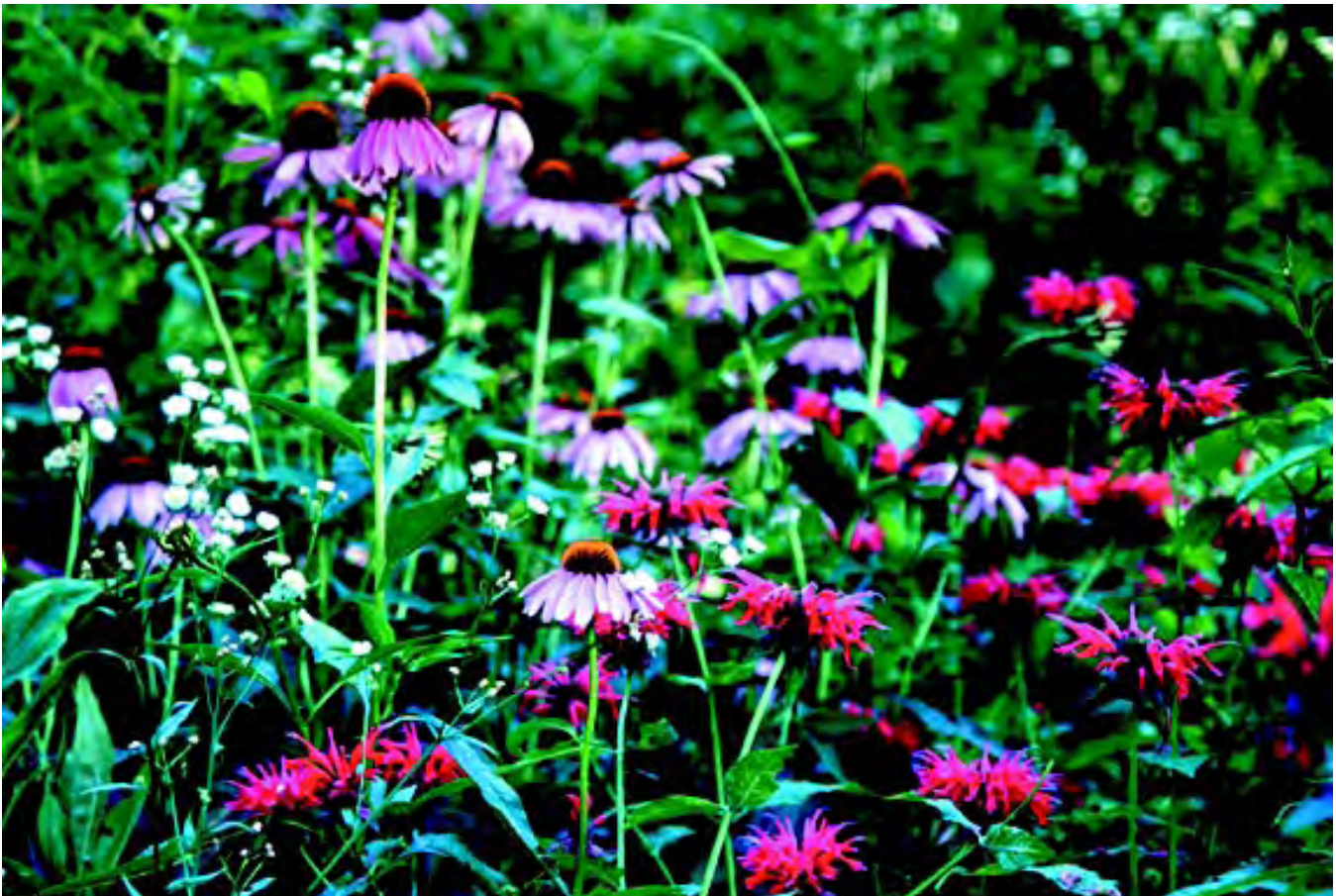
The progress that has been made in Missouri has been accomplished through hard work and commitment from citizens, state and local government, solid waste management districts and the solid waste industry. Sound planning for solid waste management systems is essential to continued environmental protection through appropriate

solid waste management. The department recognizes the importance of planning and has begun the process of developing a comprehensive statewide solid waste management plan.

The state's solid waste plan will be developed in cooperation with local governments, regional planning commissions, solid waste management districts and appropriate state agencies. The process will use

stakeholder groups comprised of individuals from these areas, as well as several other sectors with a strong interest in solid waste issues:

- business and industry
- citizens and non-profit groups
- educational, medical and other large institutions.



The plan process will include several steps:

First, an examination of the current situation in solid waste management to determine where we are. This document, *The State of Garbage in Missouri*, will serve as a significant component of this step in the planning process by documenting existing conditions. The results of the waste characterization studies described earlier in this document are also key planning components. Additionally, a study of industrial, construction and demolition waste is currently underway and, when completed, will be a component of this step.

A public opinion survey is scheduled to be conducted in the fall of 1999 to lend insight to the views Missouri citizens have regarding solid waste issues. As well, the plan will be comprised of a number of components which are integral to clearly and accurately depicting the complete picture of solid waste management in Missouri. These include several social, economic, physical and demographic characteristics of the state.

The second major plan component will entail creating

goals and objectives for the future of solid waste management in Missouri. The department will work with the groups previously mentioned, which include state and local government, businesses and non-profits, to determine where we would like to be in the next century. Goals will be developed that address each level of the integrated waste management hierarchy that has guided local and regional planning. Such goals may include waste reduction targets for specific types of waste generators, further improvements in disposal practices, or ways to reduce illegal dumping.

The third plan component will involve evaluating the best strategy for achieving the desired goals. This strategy may include adopting new policies, increasing financial and other incentives, or other recommendations for action. In this step of the planning process, the financial and resource costs will be considered for various options. This plan component will explain how state efforts can be coordinated with city, county and solid waste district efforts.

Ultimately, this plan component will describe roles and responsibilities for citizens, government and business that will be needed for the plan to succeed.

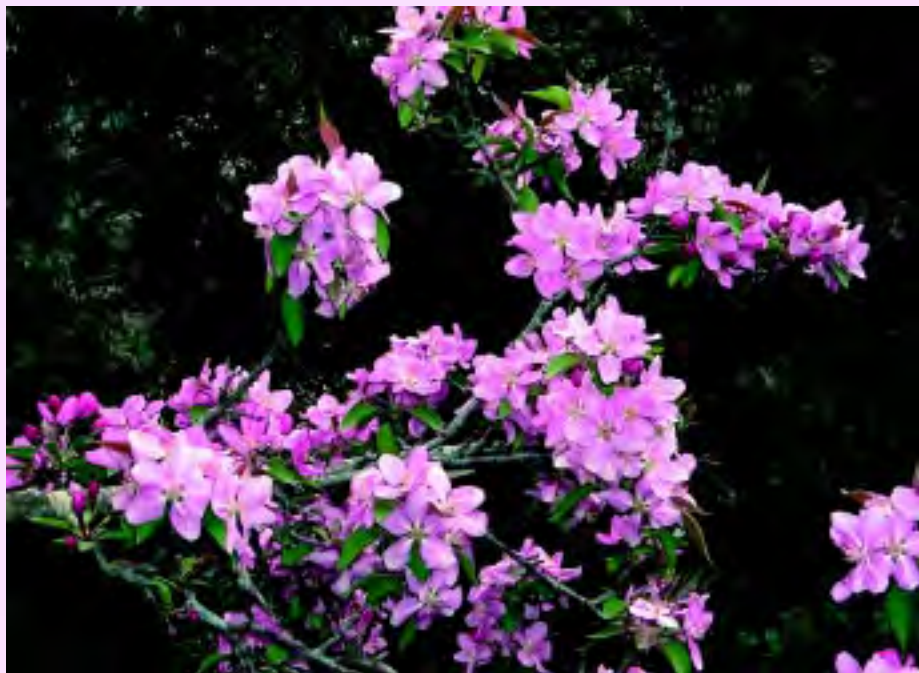
The statewide planning process will be an important focus of the department's Solid Waste Management Program for the next several years. The approach of a new millennium has induced a frenzy of short-term planning efforts to avoid problems that may occur when the year 2000 begins.

Protecting the environment for future generations requires long-range planning. The Solid Waste Management Program will be entering the new millennium focusing on developing and implementing a statewide solid waste management plan to effectively guide solid waste management decisions that will protect Missouri's environment for future generations.



Playground surfaced with rubber chips made from waste tires.

Appendix



CHAPTER 260

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- 260.003** General Provisions
- 260.200** Definitions
- 260.203** Infectious waste, treatment of--hospitals, department of health to promulgate rules--transportation of--registration of hospitals proper disposal. penalty--fee on delivery, exceptions--inspection fee, amount, fund, refund of, when.
- 260.204** Permit for treatment of infectious waste, not to be issued, when.
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Missouri Policy on Resource Recovery

STATEMENT

It is the policy of the State of Missouri to integrate appropriate resource-recovery philosophies and practices into all relevant activities in order to minimize the amount of solid waste that requires disposal, reduce environmental and public health threats, increase the manufacture and use of products made from recycled materials and preserve our natural resources.

GOALS

The goals of the policy are as follows:

To incorporate solid waste reduction, recycling and resource recovery into the solid waste management activities of state and local governments, industries and citizens.

To apply an integrated waste management hierarchy when managing local and regional solid-waste streams to minimize possible environmental impacts associated with any one technology and to achieve the maximum feasible use of waste reduction, recycling and resource recovery. This hierarchy is as follows

First - reduce the amount of solid waste created

Second - reuse, recycle and compost

Third - recover and use energy from solid waste

Fourth - incinerate or dispose of in a sanitary landfill

To facilitate the use of recycled materials by Missouri manufacturers and encourage the development of markets for recycled materials by incorporating solid waste reduction, recycling and resource recovery concepts into programs involving procurement, industrial development, capital works and other appropriate areas.

To coordinate technical and financial assistance for solid waste reduction, recycling and resource recovery in accordance with state and local solid waste management plans.

OBJECTIVES FOR STATE GOVERNMENT

State government shall assure that the implementation of state, regional and local solid waste management systems and plans support the Missouri Policy on Resource Recovery, the Missouri Solid Waste Management Law and Rules and Missouri Resource Recovery Feasibility and Planning Study.

State government shall coordinate financial assistance to promote programs for waste reduction, resource recovery, market development for recovered materials, recycled

materials procurement and solid waste management programs that are in accordance with the Missouri Policy on Resource Recovery, the Missouri Solid Waste Management Law and Rules and Missouri Resource Recovery Feasibility and Planning Study.

State government shall provide a clearinghouse of consumer information regarding the need to support resource recovery; to utilize and develop new resource recovery programs around existing enterprises; to promote the development of markets for recovered materials; to request and purchase recycled products; and to participate in resource conservation activities and other relevant issues.

State government shall update the state's solid waste management plan so it addresses the state resource recovery policy.

State government shall assure that the implementation of state and local solid-waste management systems and plans are based upon the integrated solid-waste management hierarchy.

OBJECTIVES FOR LOCAL GOVERNMENT

To promote waste reduction, market development for recovered materials and resource recovery, local governments, industries and citizens shall coordinate and implement economically feasible policies for integrated waste-management systems, and shall increase procurement of products made from recycled materials.

Local and regional solid-waste management shall be mutually supportive and consistent with the Missouri Policy on Resource Recovery, Missouri Solid Waste Management Law and Rules and the Missouri Resource Recovery Feasibility and Planning Study.

Local solid-waste management plans shall implement solid-waste management systems based upon the integrated solid-waste management hierarchy, protect the public health and the environment and meet the residential, commercial, industrial and agricultural needs of the region.

OBJECTIVES FOR LEGISLATIVE ACTION

The state legislature shall appropriate funds to fully implement the Missouri Solid Waste Management Law, especially those areas that implement the state's resource-recovery policy.

The state legislature also shall promote legislation consistent with the state resource-recovery policy.

Figure 9

Sanitary Landfills



- Active Sanitary Landfills, December 1998
(Facilities are identified by number in Table 3)
- Solid Waste Management Region Boundaries

Table 3

Sanitary Landfills

No.	Facility Name	Owner	City ¹	Annual Tonnage ²
1	Backridge Sanitary Landfill	Browning-Ferris Industries	LaGrange	99,528
2	Black Oak Recycling and Disposal Facility	Waste Management of Missouri, Inc.	Hartville	259,037
3	Bridgeton (West Lake Sanitary Landfill Inc.)	Allied Waste Industries, Inc.	Bridgeton	890,868
4	Butler County Sanitary Landfill	Allied Waste Industries, Inc.	Poplar Bluff	126,927
5	Central Missouri Landfill, Inc.	Central Missouri Landfill, Inc.	Sedalia	82,124
6	City of Columbia Sanitary Landfill	City of Columbia	Columbia	127,834
7	Courtney Ridge Recycling and Disposal Facility	Waste Management of Missouri, Inc.	Sugar Creek	406,276
8	Ellis Scott Sanitary Landfill	Allied Waste Industries of Missouri	Clinton	31,556
9	Fred Weber Inc. Sanitary Landfill	Fred Weber Inc.	Maryland Heights	338,752
10	Fulton Sanitary Landfill	City of Fulton	Fulton	10,047
11	Jefferson City Sanitary Landfill	Allied Waste Industries, Inc.	Jefferson City	183,999
12	Lamar Sanitary Landfill	Browning-Ferris Industries	Lamar	164,630
13	Lee's Summit Sanitary Landfill	City of Lee's Summit	Lee's Summit	75,955
14	Lemons Landfill Corporations, Inc. SLF	Allied Waste Systems, Inc.	Dexter	196,688
15	Maryville Sanitary Landfill	City of Maryville	Maryville	10,722
16	Moberly Municipal Sanitary Landfill	City of Moberly	Moberly	11,884
17	Northside Sanitary Landfill	Northside Sanitary Landfill	Washington	29,037
18	Rye Creek Sanitary Landfill	Rye Creek Corporation	Kirksville	23,329
19	Show Me Regional Sanitary Landfill	Allied Waste Industries, Inc.	Warrensburg	70,760
20	Southeast Sanitary Landfill	Allied Waste Systems, Inc.	Kansas City	317,097
21	Springfield Sanitary Landfill	City of Springfield	Springfield	96,295
22	St. Joseph City Sanitary Landfill	City of St. Joseph	St. Joseph	109,235
23	Struckhoff Sanitary Landfill	Struckhoff Sanitary Landfill	Washington	19,564
24	Superior Maple Hill	Teter Sanitary Landfill	Macon	101,303
25	Superior Oak Ridge Landfill	Superior Service, Inc.	Valley Park	242,202
26	Sutton & Sons	Cardinal Waste, Inc.	Bowling Green	31,430

¹ City in which the facility is located, or which is nearest to the facility location.

² This number represents the tons reported on tonnage fee reports submitted to the department during the most recent 12 month period for which data is available: the 4th quarter of 1997, and the first three quarters of 1998.

Figure 10

Demolition, Special Waste & Utility Landfills



(Facilities are identified by number in Tables 4-6)
Facilities Permitted as of December 1998

Table 4

Demolition Landfills

No.	Facility Name	Owner	City ¹	Annual Tonnage ²
1	A.P. Green Demolition Landfill	A.P. Green Refractories	Mexico	5,014
2	Peerless Landfill Inc.	Peerless Landfill Inc.	Valley Park	146,138
3	Rock Hill Demolition Landfill	Rock Hill Quarries Co.	St. Louis	123,993
4	Rye Creek Demolition Landfill	Rye Creek Corporation	Kirksville	3,546

¹ City in which the facility is located, or which is nearest to the facility location.

² This number represents the tons reported on tonnage fee reports submitted to the department during the most recent 12 month period for which data is available: the 4th quarter of 1997, and the first three quarters of 1998.

Table 5

Utility Waste Landfills

No.	Facility Name	Type of Owner	City ¹
5	James River Power Station Utility Waste	Public	Springfield
6	KCP&L Co. Montrose Fly Ash	Private	Clinton
7	Sibley Generator Station	Private	Sibley
8	Southwest Generator Station	Public	Springfield
9	Thomas Hill Energy Center	Private	Thomas Hill

¹ City in which the facility is located, or which is nearest to the facility location.

Table 6

Special Waste Landfills

No.	Facility Name	Type of Owner	City ¹
10	3M Co.'s Nevada Plant Special Waste	Private	Nevada
11	Amoco Oil Dirt Land Treatment Facility	Private	Sugar Creek
12	Henry County Water Co. Sludge Disposal Pit	Private	Clinton
13	K.C. Recycling	Private	Kansas City
14	Prospect Hill Reclamation Project	Private	St. Louis

¹ City in which the facility is located, or which is nearest to the facility location.

Figure 11

Transfer Stations



- Facilities are identified by number in Table 7
- Solid Waste Management Region Boundaries

Permitted Active Transfer Stations, December 1998

Table 7

Transfer Stations			
No.	Facility Name	Owner	City ¹
1	Bethany T. S.	Superior of Missouri, Inc.	Bethany
2	BFI T. S. & Recycling Facility	Waste Systems of North America, Inc.	St. Louis
3	Cape Girardeau Waste T. S.	City of Cape Girardeau	Cape Girardeau
4	Cass County Solid Waste T. S.	Allied Wastes Industries, Inc.	Harrisonville
5	Chillicothe T. S.	City of Chillicothe	Chillicothe
6	Christian Disposal, Inc. T. S.	Christian Disposal, Inc.	Winfield
7	City of Mexico T. S.	Superior Services, Inc.	Mexico
8	City of Boonville	City of Boonville T. S.	Boonville
9	Clinton Municipal T. S.	City of Clinton	Clinton
10	CWI of Missouri	CWI, Inc.	Ste. Genevieve
11	El Dorado Springs Solid Waste T. S.	Waste Management of Missouri, Inc.	El Dorado Springs
12	Environmental Sanitation	Allied Waste Management Inc. (Laidlaw)	Jefferson City
13	Fredericktown T. S.	City of Fredericktown	Fredericktown
14	Gilliam T. S.	CWI, Inc.	Jackson
15	J.T. Brown Ent. Processing Facility	Sutton & Sons Recycling & Transfer	Hannibal
16	Jackson Solid Waste T. S.	Lemons Waste Systems, Inc.	Dexter
17	Jefferson County T. S.	Environmental Industries / Waste Mgmt.	Maryland Heights
18	Kraemer Hauling T. S.	Kraemer Hauling T. S.	Kimmswick
19	Laidlaw Waste Systems North T. S.	Allied Waste Industries, Inc.	Bridgeton
20	Longview of Kansas City T. S.	USA Waste	Kansas City
21	M.S., Inc. T. S.	Allied Waste Industries	Osage Beach
22	Meramec T. S.	Meramec Hauling	Arnold
23	Midwest Disposal and Recycling Inc. Transfer Station	Midwest Disposal & Recycling, Inc.	Rock Port
24	Missouri Disposal, Inc., T. S.	American Disp. Services of Missouri, Inc.	Reeds Springs
25	Neosho T. S.	City of Neosho	Joplin
26	Norris & Son Inc. T. S.	Norris & Son T. S.	St. Joseph
27	Pemiscot County T. S.	Pemiscot County	Caruthersville
28	Perry County T. S.	Perry County	Perryville
29	Phelps County T. S.	Phelps County Landfill Board	Rolla
30	Reliable Disposal, Inc.	Mr. and Mrs. Bobby and Betty Osmer	Pacific
31	Scotland County T. S.	Scotland County Commission	Memphis
32	Sonny's Solid Waste Services Inc.T.S.	Sonny's Solid Waste Service T.S.	Sikeston
33	Springfield City Refuse T. S.	Waste Management of MO, Inc.	Springfield
34	Springfield Relay Systems T. S.	Browning-Ferris Industries	Springfield
35	St. Francois Co. T. S.	St. Francois Co. T. S.	Park Hills
36	St. Louis Solid Waste Processing Facility	Waste Management of Missouri, Inc.	St. Louis
37	St. Robert T. S.	City of St. Robert	St. Robert
38	Stockton Lake T. S.	Stockton Lake T. S.	Stockton
39	Sunray Services Inc. Transfer & Recycling Center	Sunray Services, Inc.	Joplin
40	Taney County T. S.	Taney County Commission	Kirbyville
41	Tate's Transfer Systems, Inc.	American Disposal Services	Reeds Spring
42	Teter T. S.	Teter SLF & Hauling Refuse, Inc.	Macon
43	University City Refuse T. S.	City of University City	University City
44	Waste Mgmt. of St. Louis Recycling & Transfer Facility	Pezold Hauling	Foristell
45	Waste Mgmt. of MO, Inc.- South City Transfer Facility	Allied Waste Industries, Inc.	Westchester
46	Waste Mgmt. of the Ozarks Recycling & T. S.	Waste Management of the Ozarks	Lebanon
47	West Plains Solid Waste T. S.	City of West Plains	West Plains

¹ City in which the facility is located, or which is nearest to the facility location.

Solid Waste Management Program Staff

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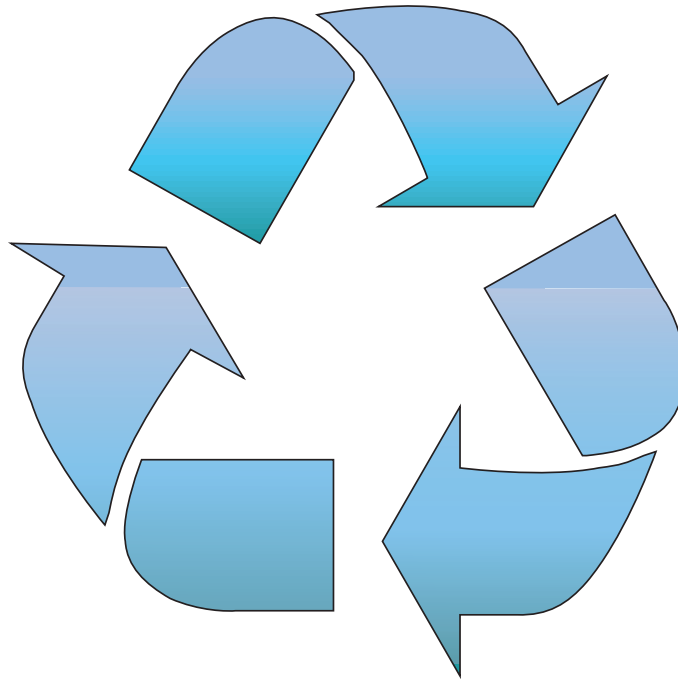
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November 1, 1999

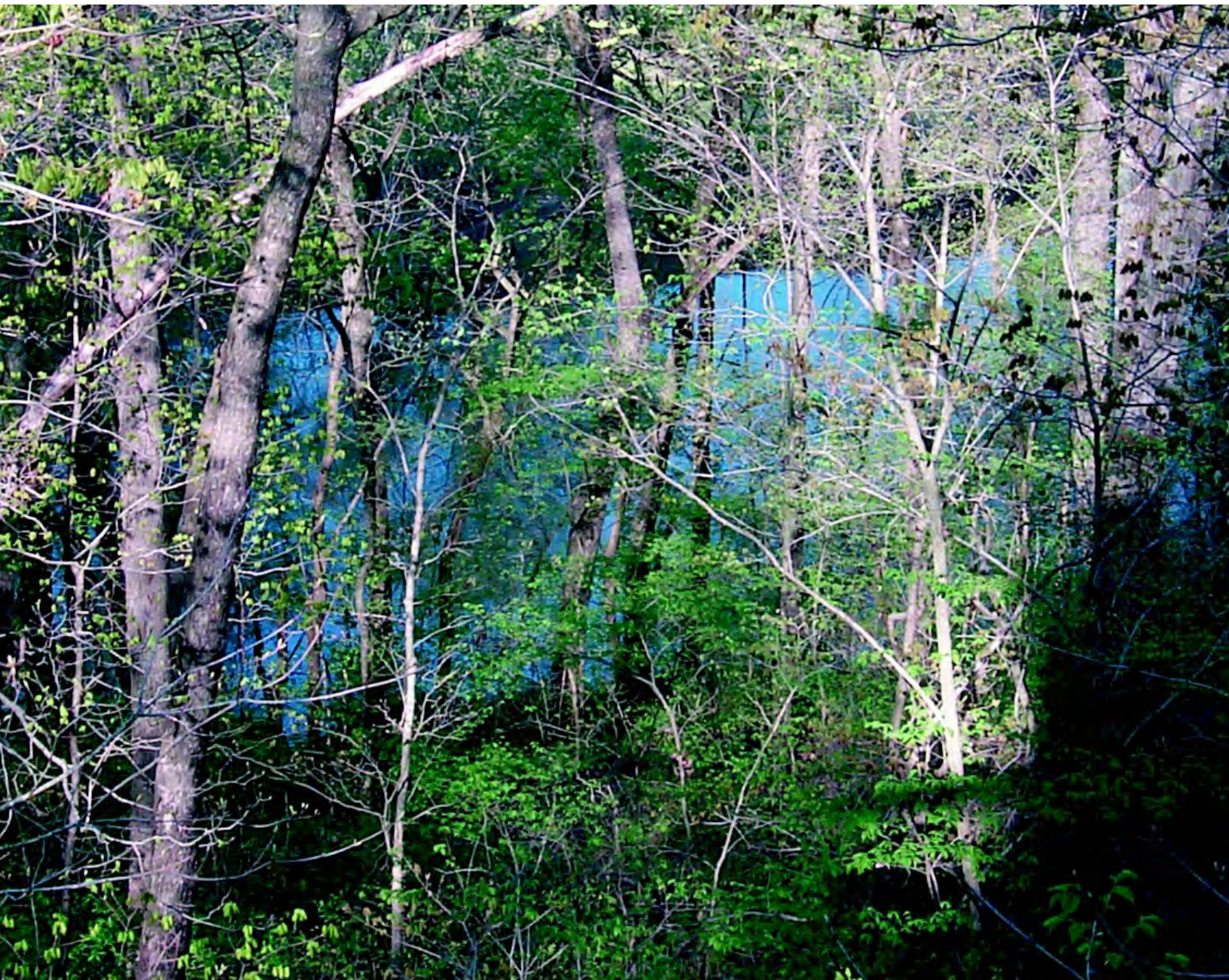
Missouri Department of Natural Resources
Division of Environmental Quality
Solid Waste Management Program



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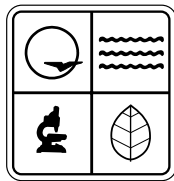
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MISSOURI

Public Opinion Survey
on
Solid Waste Management



May 2000

Prepared for the Missouri Department of Natural Resources
by Pragmatic Research Inc., St. Louis, MO

I. INTRODUCTION AND SURVEY METHODOLOGY**A. Introduction**

The Missouri Department of Natural Resources Solid Waste Management Program works to help Missourians and Missouri businesses properly manage their solid waste to protect public health and the environment. Reducing the amount of solid waste generated that is destined for landfills continues to be a primary goal of the program. Through the combined efforts of citizens, industry and government, the state can continue to increase the recovery of solid waste.

To help the Missouri DNR gain a better understanding of how the state's citizens feel, think, and act regarding issues related to solid waste management, it commissioned Pragmatic Research, Inc. to conduct a survey of Missouri residents regarding these and related topics. The information gathered through the survey will be incorporated with information obtained from other sources to enable the DNR to develop policies that meet the needs of Missouri citizens, specifically regarding the management of solid waste.

B. Survey Methodology

The questionnaire was designed by the Missouri Department of Natural Resources. Pragmatic Research, Inc. reviewed the survey and submitted minor revisions to ensure the survey items were technically correct and without bias. The final survey was then programmed using Pragmatic Research, Inc.'s CATI (Computer Aided Telephone Interviewing) software to enhance the data collection process.

A quota of 600 interviews was established, with 20 sub-quotas based on each Solid Waste Management region. The margin of error for the entire respondent base is +/- 3.92% at the 95 percent confidence level.

The sample was purchased by Pragmatic Research, Inc. using a 15-to-1 proportion based on the quotas, meaning 15 sample records were purchased for each completed interview required. The sample of approximately 9,000 records was provided in electronic format, and was randomized within each quota region.

Pragmatic Research, Inc. conducted a pilot survey pretest in October, 1999, and reviewed the results with the DNR. PRI then completed 624 interviews during November and December using our trained staff of interviewers. A three-attempt design was used to preserve the representativeness of the sample. Surveys were conducted primarily in the evening hours, using the CATI system. At all times at least one manager was monitoring the progress of calls.

Data tables were created using WinCross crosstabulation software. Significance testing was conducted between banner columns, within banner groups, for all data tables at the 95 percent confidence level. All rows were tested using the z-test (for percentages), while mean scores were tested using the t-test.

C. Sample Characteristics

As detailed on the following table, the average respondent has a two-person household with no children. They live in a single-family house, in either a rural or suburban area. One-third of respondents are 60 or older, and one-third graduated high school only. The vast majority of these respondents are white and they are nearly evenly represented by gender.

Table 1: Demographics**Percent n = 624**

Number of adults in household	1	20%	124
	2	68%	424
	3+	12%	75
Number of children in household	0	67%	417
	1	13%	78
	2	14%	86
	3+	7%	41
Type of dwelling	Single-family house	86%	537
	Multi-unit apartment/Condo	11%	67
	Other type of dwelling	3%	18
Type of neighborhood	Rural	41%	255
	Suburban	34%	211
	Urban or Downtown	25%	153
Age	Younger than 30	6%	40
	30-39	15%	91
	40-49	19%	121
	50-59	18%	112
	60 or older	35%	220
Education Level	Some high school or less	12%	76
	High school graduate	32%	200
	Some college or trade school	20%	122
	College graduate	22%	134
	Post graduate	8%	51
Annual Income	Less than \$25k	14%	90
	\$25-34K	11%	71
	\$35-49K	17%	105
	\$50-74k	14%	85
	\$75k or more	8%	52
	Refused	35%	221
Ethnic Background	Caucasian/White	92%	572
	African-American	5%	30
	Other ethnicity	2%	13
	Refused	1%	9
Gender	Male	51%	319
	Female	49%	305

II. EXECUTIVE SUMMARY

Importance of Issues to Missourians

When given a list of six issues, the majority of Missouri respondents say ‘education’ or ‘health care’ are the most important issues facing the state. The next most mentioned issues are ‘the economy,’ ‘safety and crime’ and ‘the environment,’ while ‘social services’ are rated least important.

Seriousness of Environmental Issues to Missourians

When given a list of eight issues, Missourians who were surveyed rate ‘the management and disposal of solid waste’ and ‘the water quality in lakes, rivers and streams’ as the most serious environmental problems in the state. ‘Urban sprawl,’ ‘the quality of drinking water’ and ‘soil erosion’ are rated least serious.

Respondents say the most serious waste disposal problem facing the state is ‘dumping trash on public lands’ followed by ‘litter,’ while ‘individuals burning trash’ is rated lowest.

Perceived Performance of the Department of Natural Resources (DNR)

Missourians surveyed indicate moderate satisfaction with the performance of the Department of Natural Resources (DNR), with 48 percent giving it ‘excellent’ or ‘good’ ratings. Only two percent of Missourians surveyed say they are not at all familiar with the DNR.

What Comes to Mind when Missourians Hear the Term “Solid Waste”

Sixty-four percent of surveyed Missourians think of either ‘trash’ or ‘garbage’ when they hear the term ‘solid waste.’ The next most common mention is ‘sewage’ which may indicate some confusion about what solid waste is. Only a small number think of negative terms like ‘smell,’ ‘stench,’ ‘rats’ or ‘flies.’

Information Sources for Current Issues Related to “Solid Waste”

The dominant source among Missourians surveyed for information about solid waste is newspapers, with 62 percent of respondents mentioning this source. The next most mentioned sources are television, newsletters and magazines and the radio.

Recycling Among Missourians

Seventy-one percent of Missourians surveyed say they recycle. Aluminum cans are the item recycled most often, by 61 percent of respondents. The second and third most often recycled items are newspapers and plastic containers, while 26 percent of surveyed Missourians say they recycle glass.

Who in the Household Participates in Recycling

Among surveyed Missourians who recycle, adults are usually completely or partially responsible for recycling.

Availability of Curbside Recycling

Among surveyed Missourians who recycle, 67 percent take the recyclables to a drop off, while 26 percent have curbside recycling.

The Main Reason Missouri Households Recycle

Among surveyed Missourians who recycle, 48 percent say they recycle ‘to conserve resources’ while 43 percent say they recycle ‘to teach good values.’ Twenty-four percent say they recycle because ‘landfill space is limited’ and 20 percent of Missourians surveyed say they recycle for ‘the money.’

Management of Yard Waste and Participation in Composting

Eighty-six percent of Missourians surveyed live in a household that generates yard waste. Among Missourians surveyed who generate yard waste, 34 percent compost and 28 percent mulch the materials. Those who recycle are significantly more likely than their counterparts to compost their yard waste. Twenty-one percent of surveyed Missourians say their household composts kitchen waste.

Household Makes Effort to Buy Items Made from Recycled Materials

Forty-three percent of Missourians surveyed say they try to buy items made from recycled materials. Among those who make an effort to purchase recycled items, 57 percent say they buy any item that comes in a recycled package.

Sixty-seven percent of Missourians surveyed say products made from recycled materials offer the same quality as products made from new materials.

Ways to Promote Recycling in Missouri

Among Missourians surveyed who already recycle, curbside pickup of recyclables was the most frequent response regarding what would make them recycle more. Curbside pickup of recyclables was also the most frequent response given by those who do not recycle regarding what would make them more likely to recycle.

Amount Missourians Would Be Willing to Pay to Recycle

Among those surveyed who currently recycle, 55 percent say they are unwilling to pay anything extra so they *could* recycle (*if a fee were necessary*).

Agreement that Manufacturers Share Responsibility for Recycling

Fifty-eight percent of Missourians surveyed say manufacturers should share in the responsibility of recycling or disposing of the products they sell to consumers.

Support for Increasing Disposal Costs to Make Other Alternatives More Cost Effective

Missourians surveyed are nearly evenly divided regarding whether disposal costs (fees) should be increased to make the other alternatives more cost effective.

Use of Ground Waste Tires as an Ingredient for Highway Pavement

Eighty-six percent of Missourians surveyed support the increased use of ground waste tires as an ingredient in asphalt for paving highways.

Availability of Trash Collection and Satisfaction with Trash Disposal Options

Ninety percent of Missouri households are served by trash collection. Most Missourians surveyed report they are satisfied with their current form of trash removal.

Trash Disposal Provider

Seventy percent of surveyed Missourians who have trash pickup say their trash is collected by a private company, while 27 percent receive the service from their city or town.

Household Member(s) Responsible for Taking Out the Trash

Eighty-four percent of Missourians surveyed report that adults are responsible for taking out the trash.

Amount of Trash Generated by Missouri Households

Overall, 52 percent of the households surveyed generate two or fewer bags of trash per week, while 32 percent generate four or more bags of waste per week.

Frequency of Trash Pickup Among Missouri Households

Among surveyed Missourians with trash pickup, 72 percent have trash pickup once a week, while 24 percent have pickup two times per week.

Average Monthly Fee for Trash Collection

On average, surveyed Missourians with trash pickup pay \$16 a month for trash collection, while more 29 percent pay no direct fee (the charge is included in their rent, taxes or some other fee).

Disposal Methods for Households Without Trash Collection

Among Missourians surveyed who do not have trash collection, 47 percent say they dispose of their trash by burning it.

Attitudes Regarding Trash Collection Fees Being Based on Volume

Seventy percent of the Missourians surveyed say businesses should be charged based on the amount of trash they produce.

Thirty-one percent of the respondents, however, say that consumers should be charged based on the amount of trash produced. Fifty-five percent say all residential households should be charged the same.

Attitudes Regarding Responsibility for Solid Waste Cleanup

Forty percent of Missourians surveyed say that individual households should be responsible for disposal of solid waste and trash. Nineteen percent say it is the responsibility of the state of Missouri.

Regarding the cleanup of illegal dump sites, Missourians surveyed are equally likely to say either the state or local government or the person or business that dumped the waste should bear the greatest responsibility.

III. SPECIFIC STUDY FINDINGS

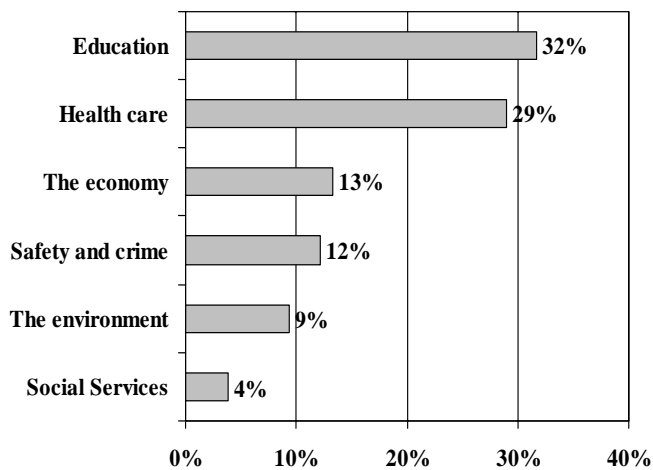
Importance of Issues to Missourians

When given a list of six issues, the majority of Missouri residents say ‘education’ (32%) or ‘health care’ (29%) are the most important issues facing the state (*first mention only*).

Combining first, second, and third mentions, ‘education’ and ‘health care’ are the most important issues facing Missourians, with 69 percent selecting each. Fifty-five percent mention ‘safety and crime’ and 43 percent mention ‘the environment.’ ‘Social services’ are rated least important (18%).

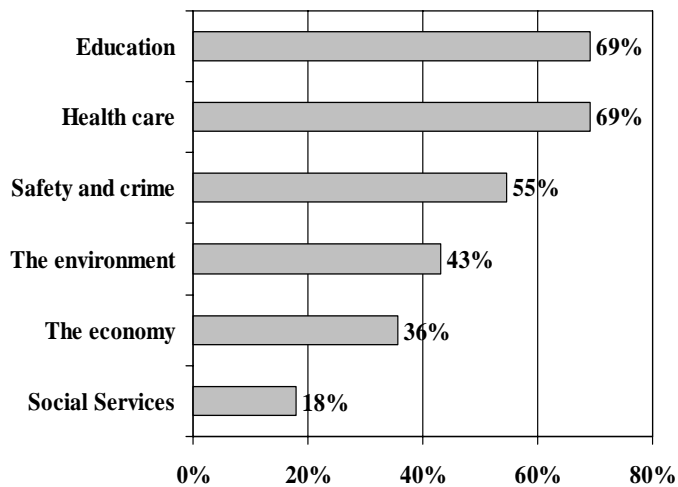
ISSUES MOST IMPORTANT TO MISSOURIANS

(FIRST MENTION, ONLY)



ISSUES MOST IMPORTANT TO MISSOURIANS

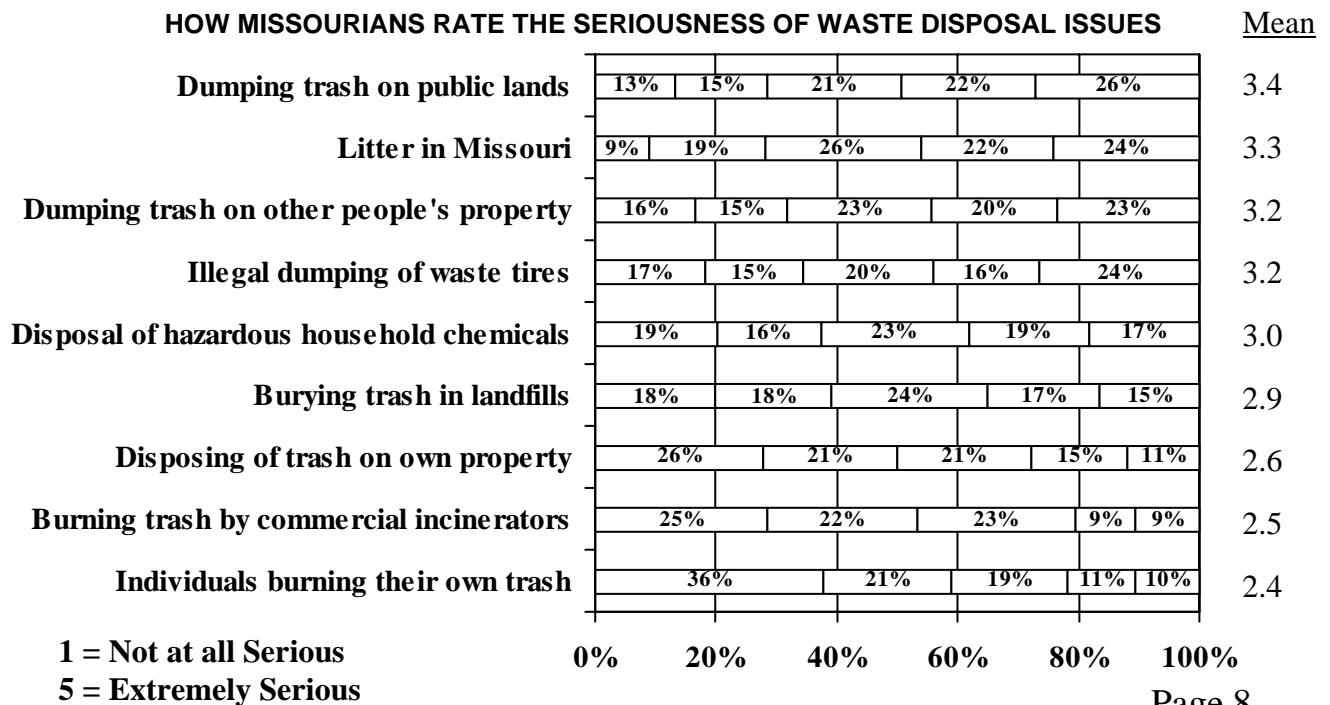
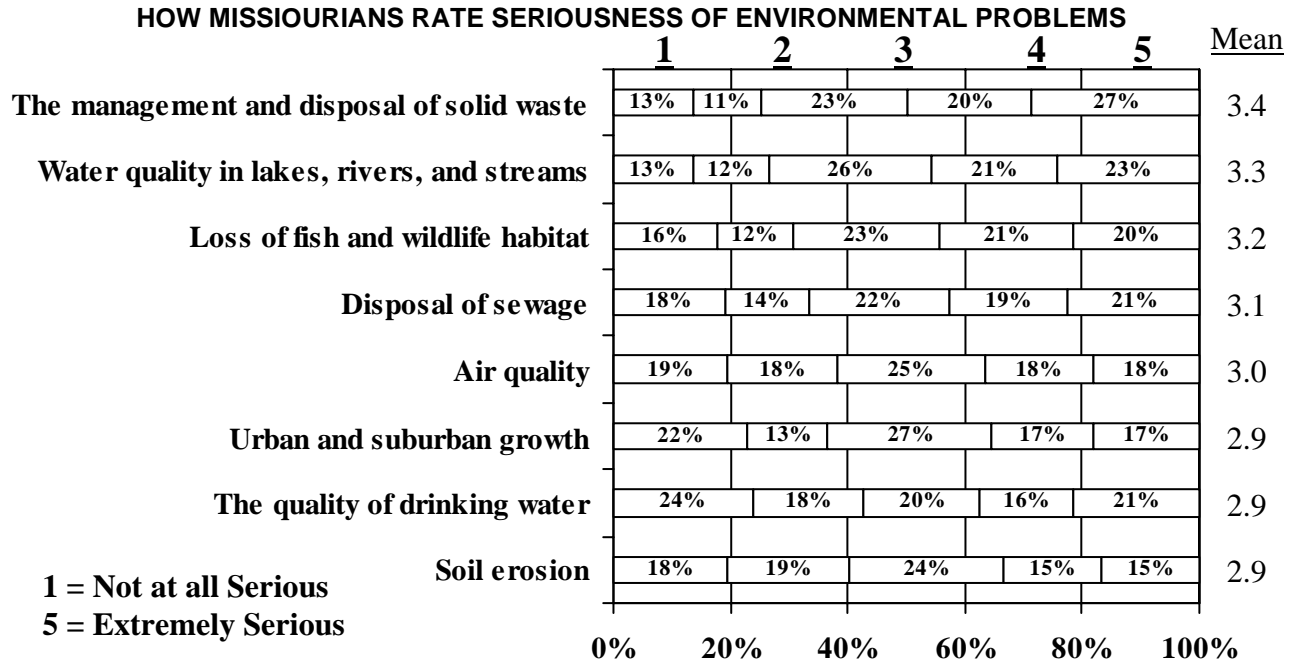
(FIRST, SECOND AND THIRD MENTIONS COMBINED)



Seriousness of Environmental Issues to Missourians

When given a list of eight issues, Missourians who were surveyed rate 'the management and disposal of solid waste' and 'the water quality in lakes, rivers and streams' as the most serious environmental problems in the state. 'Urban sprawl,' 'the quality of drinking water' and 'soil erosion' are rated least serious.

Respondents say the most serious waste disposal problem facing the state is 'dumping trash on public lands' followed by 'litter,' while 'individuals burning trash' is rated lowest.



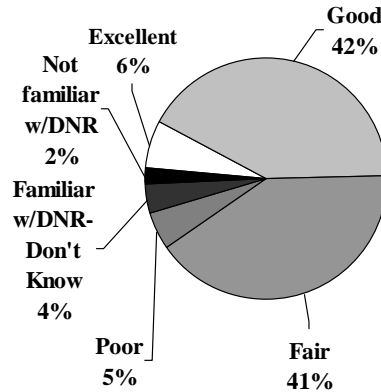
Perceived Performance of the Department of Natural Resources (DNR)

Missourians surveyed indicate moderate satisfaction with the performance of the Department of Natural Resources (DNR), with 48 percent giving it 'excellent' or 'good' ratings.

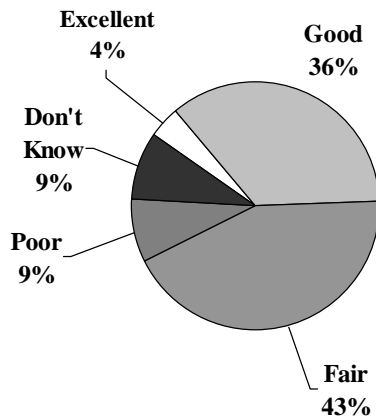
Regarding 'preserving and protecting the state's resources', the mean score is 2.5 -- between "fair" and "good" (*on a scale where 1 = "Poor" and 4 = "Excellent"*) Only two percent of Missourians surveyed say they are not at all familiar with the DNR.

Those familiar with the DNR (n=611) indicate moderate satisfaction with the job the DNR is doing regarding 'inspiring the use of the state's resources' (mean score of 2.6) and regarding 'ensuring solid waste is properly managed' (mean score of 2.4).

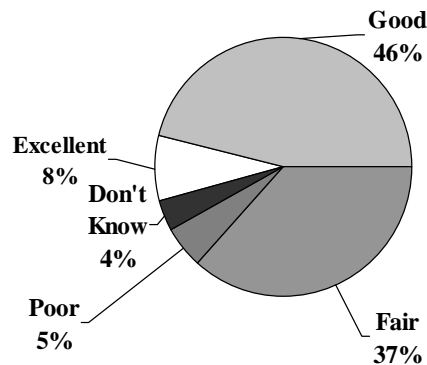
HOW GOOD OF A JOB IS THE DNR DOING IN PROTECTING THE STATE'S NATURAL, CULTURAL AND ENERGY RESOURCES?



HOW GOOD OF A JOB DO MISSOURIANS PERCEIVE THE DNR IS DOING WITH THE MANAGING OF "SOLID WASTE"?



HOW GOOD OF A JOB IS THE DNR DOING WITH INSPIRING THE ENJOYMENT AND RESPONSIBLE USE OF THE STATE'S NATURAL RESOURCES?

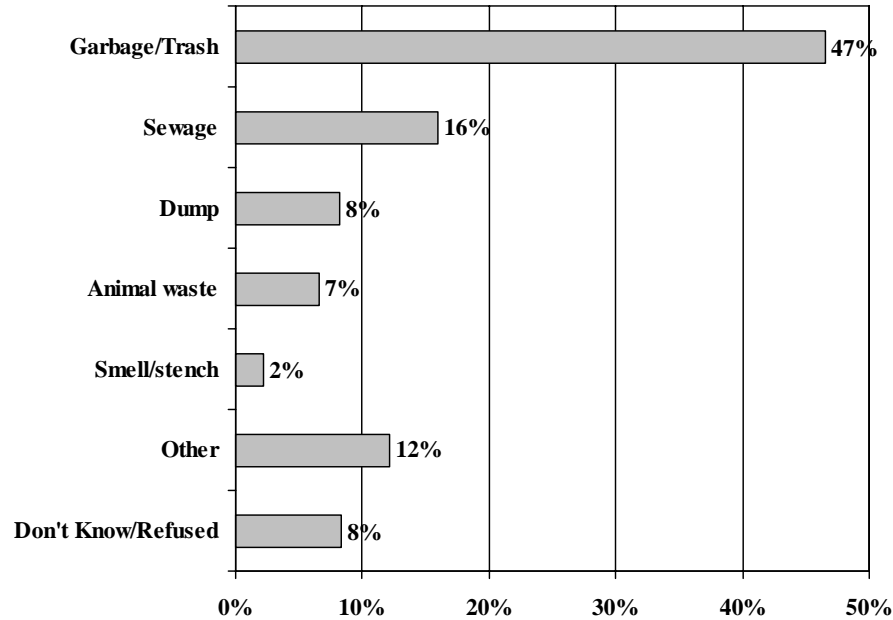


What Comes to Mind when Missourians Hear the Term “Solid Waste”

Sixty-four percent of surveyed Missourians think of either ‘trash’ or ‘garbage’ when they hear the term ‘solid waste.’* The next most common mention is ‘sewage’ (27%) which may indicate some confusion about what solid waste is. Only a small number mention negative terms like ‘smell,’ ‘stench,’ ‘rats’ or ‘flies.’

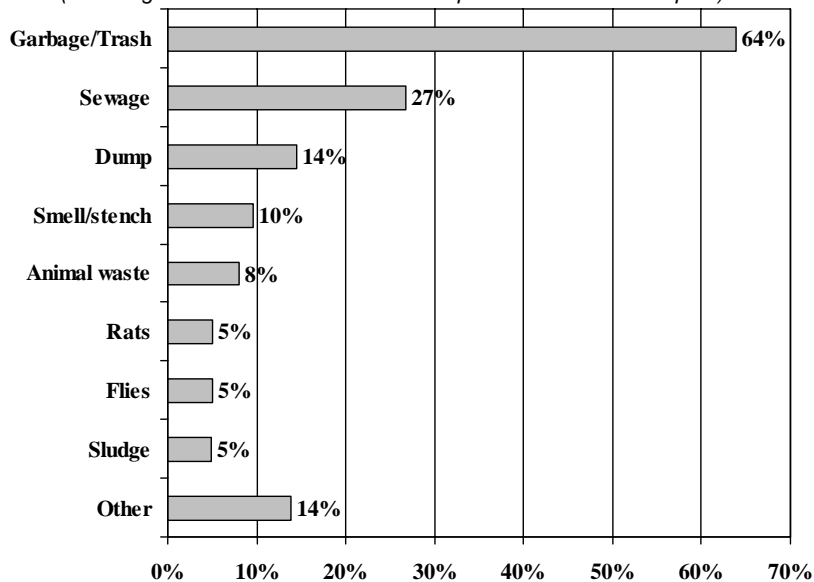
*First through fifth mention combined.

WHAT MISSOURIANS THINK OF WHEN THEY HEAR THE TERM “SOLID WASTE” (FIRST MENTION ONLY)



WHAT MISSOURIANS THINK OF WHEN THEY HEAR THE TERM “SOLID WASTE” (FIRST THROUGH FIFTH MENTION COMBINED)

(Total is greater than 100% because multiple answers were accepted)

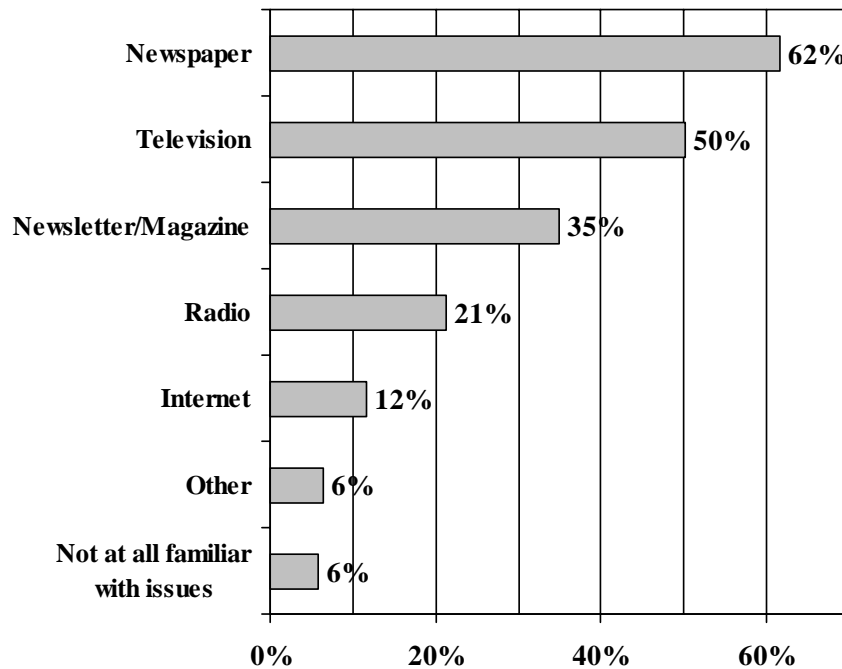


Information Sources for Current Issues Related to “Solid Waste”

The dominant source among surveyed Missourians for information about solid waste is newspapers, with 62 percent of respondents mentioning this source. The next most mentioned sources are television (50%), newsletters and magazines (35%) and the radio (21%).

**HOW MISSOURIANS OBTAIN INFORMATION REGARDING CURRENT ISSUES
RELATED TO “SOLID WASTE”**

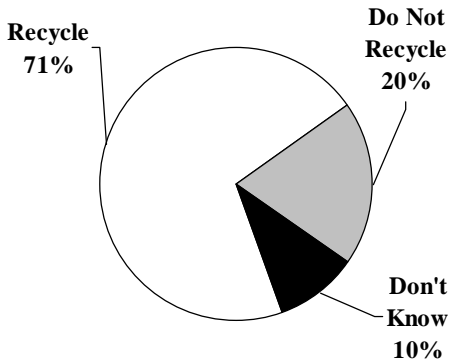
(Total is greater than 100% because multiple answers were accepted)



Recycling Among Missourians

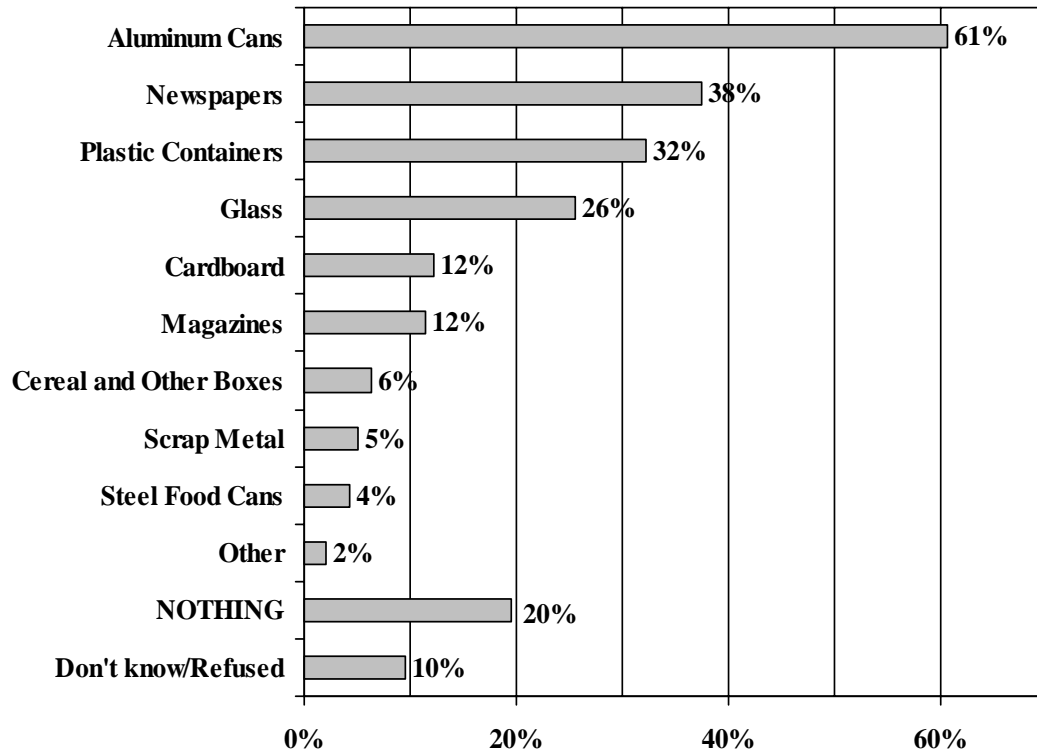
Seventy-one percent of Missourians surveyed say they recycle. Aluminum cans are the item recycled most often, by 61 percent of respondents. The second and third most often recycled items are newspapers (38%) and plastic containers (32%). Twenty-six percent of Missourians surveyed say they recycle glass.

DOES YOUR HOUSEHOLD RECYCLE?



WHAT DOES YOUR HOUSEHOLD TYPICALLY RECYCLE?

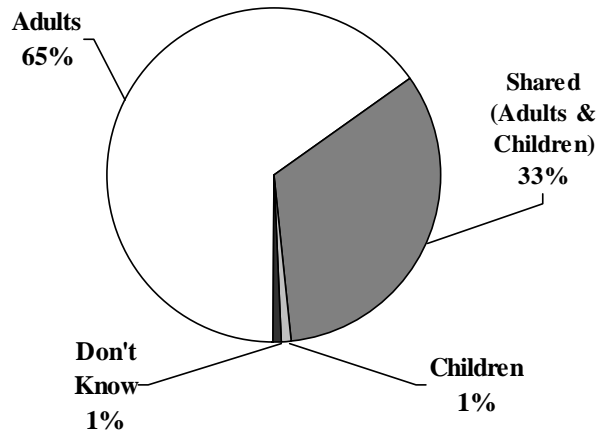
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Who in the Household Participates in Recycling

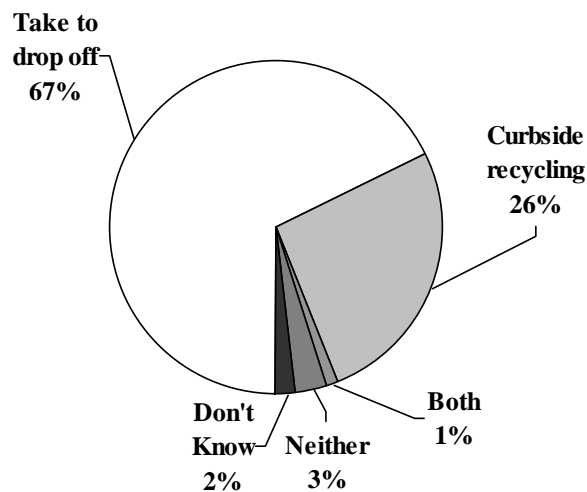
Among surveyed Missourians who recycle (n=442), adults are usually completely (65%) or partially responsible for recycling (33%).

WHO IN YOUR HOUSEHOLD PARTICIPATES IN RECYCLING?



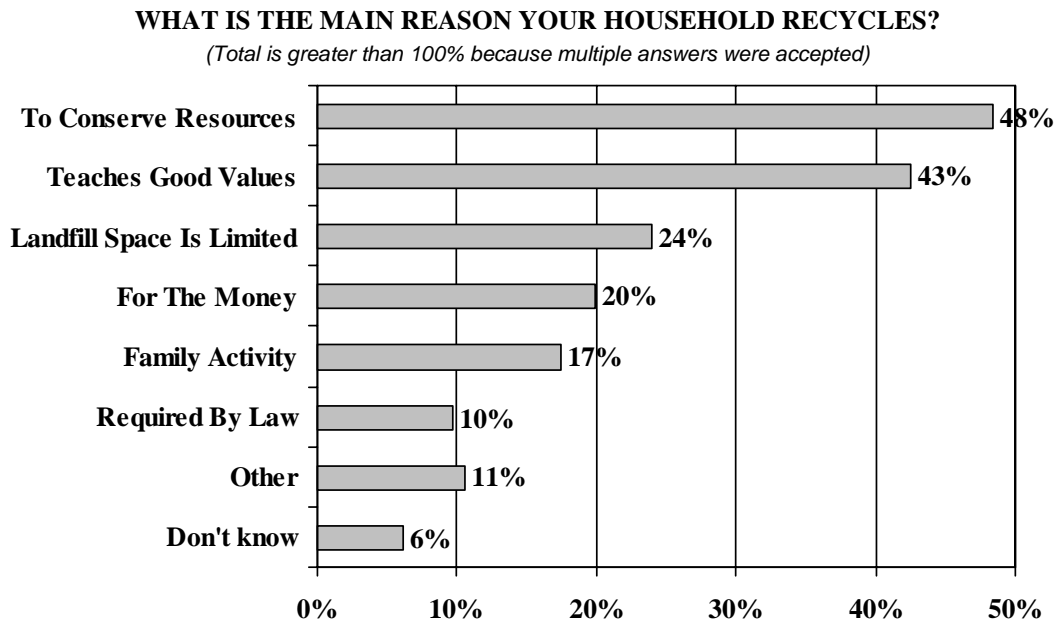
Availability of Curbside Recycling

Among surveyed Missourians who recycle (n=442), 67 percent take the recyclables to a drop off, while 26 percent have curbside recycling.



The Main Reason Missouri Households Recycle

Among surveyed Missourians who recycle (n=442), 48 percent say they recycle ‘to conserve resources’ while 43 percent say they recycle ‘to teach good values.’ Twenty-four percent say they recycle because ‘landfill space is limited’ and 20 percent say they recycle for ‘the money.’

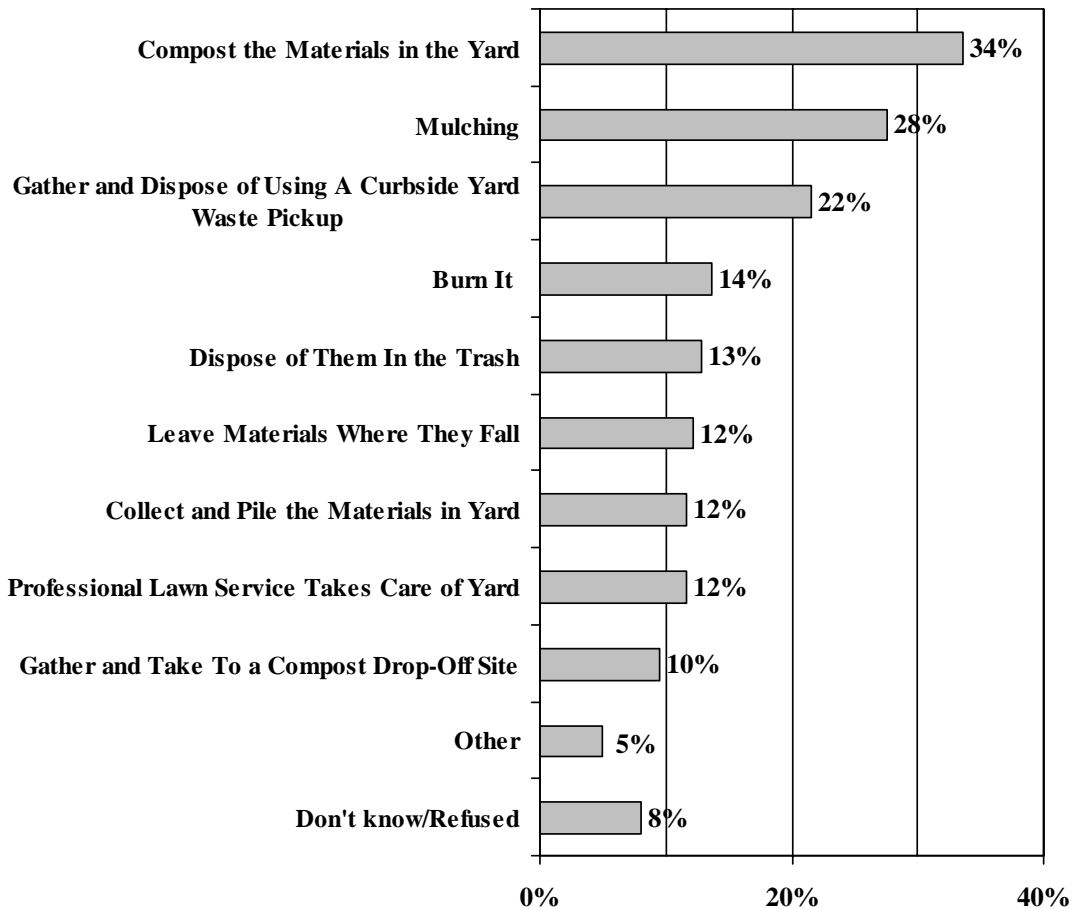


Management of Yard Waste and Participation in Composting

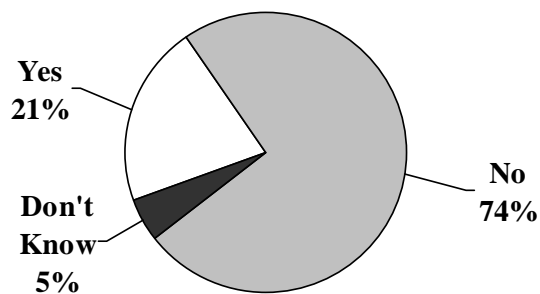
Eighty-six percent of Missourians surveyed live in a household that generates yard waste. Among those who generate yard waste (n=539), 34 percent compost and 28 percent mulch the materials. Those who recycle are significantly more likely than their counterparts to compost their yard waste.

Twenty-one percent of surveyed Missourians say their household composts kitchen waste.

WHAT DO YOU TYPICALLY DO WITH THE YARD OR GARDEN WASTES?



DOES ANYONE IN YOUR HOUSEHOLD COMPOST KITCHEN WASTE?

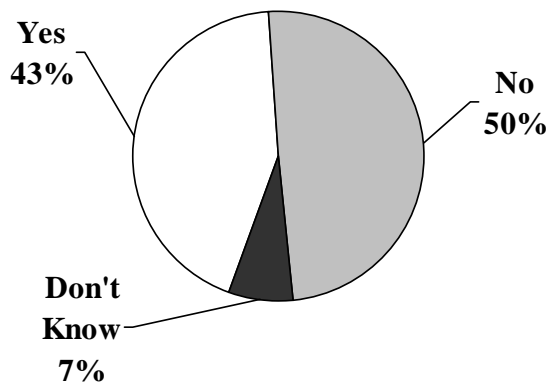


Household Makes Effort to Buy Items Made from Recycled Materials

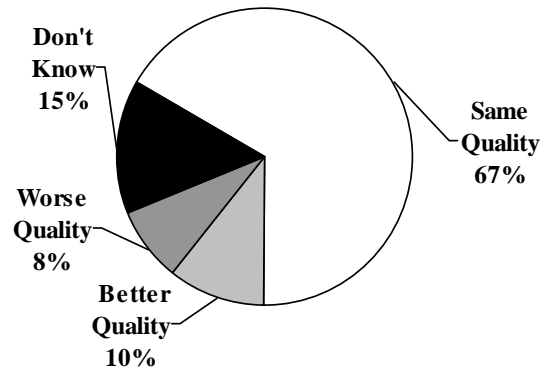
Forty-three percent of Missourians surveyed say they try to buy items made from recycled materials. Among those who make an effort to purchase recycled items (n=270), 57 percent say they buy any item that comes in a recycled package. The most frequently mentioned items are paper products.

Sixty-seven percent of Missourians surveyed say products made from recycled materials offer the same quality as products made from new materials, while 10 percent say they are better, and eight percent say they are worse.

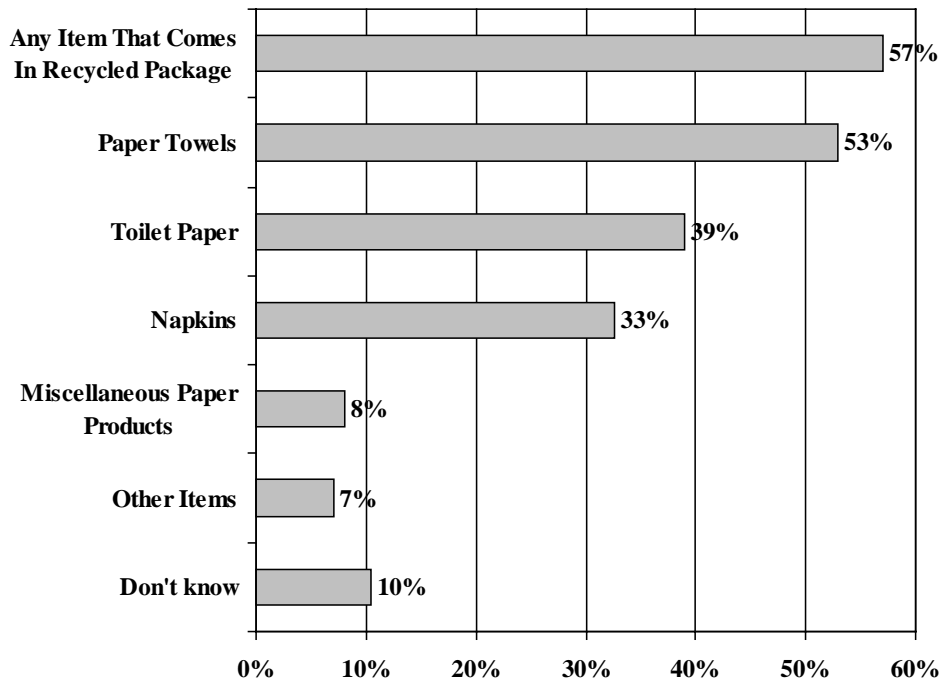
**DOES YOUR HOUSEHOLD TRY TO BUY ITEMS
MADE FROM RECYCLED MATERIALS?**



**HOW DO YOU PERCEIVE PRODUCTS MADE FROM
RECYCLED MATERIALS COMPARED TO THOSE MADE
FROM NEW MATERIALS?**



WHICH RECYCLED ITEMS DO YOU MAKE AN EFFORT TO BUY?



Ways to Promote Recycling in Missouri

Among surveyed Missourians who already recycle (n=442), curbside pickup of recyclables was the most frequent response regarding what would make them recycle more (39%).

Among surveyed Missourians who do not currently recycle (n=182), curbside pickup of recyclables (31%) was also the most frequent response given regarding what would make them more likely to recycle.

WHAT WOULD MAKE YOUR HOUSEHOLD RECYCLE (MORE)?

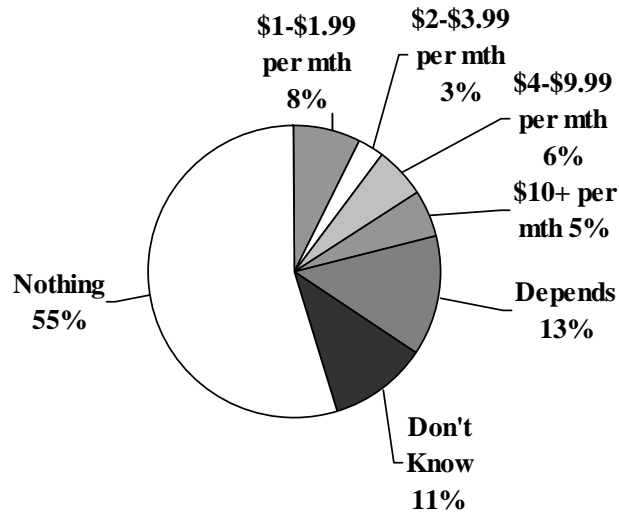
(Total is greater than 100% because multiple answers were accepted)

	Recycle n=442	Do Not n=182
Curbside pickup of recycleables	39%	31%
Get paid more for recycling (pay more per lb.)	16%	12%
Recycling centers -- closer/more convenient location	12%	13%
Knowing where recycling centers are	11%	0%
Recycling centers -- more locations	11%	10%
Charge a deposit/fee on store items	10%	7%
Provide bins for storing recycle-able materials	10%	10%
Law requiring recycling	10%	11%
Charge more for trash disposal than for recycling	5%	7%
Recycling centers -- longer hours	4%	4%
Proactive ads	2%	0%
Other -- Some other comment	8%	9%
Nothing can be done to increase recycling	12%	13%
Don't know/Refused	25%	37%

Amount Missourians Would Be Willing to Pay to Recycle

Among those Missourians surveyed who currently recycle (n=442), 55 percent say they are unwilling to pay anything extra so they *could* recycle (*if a fee were necessary*). However, a small minority (5%) say they would pay \$10 or more per month.

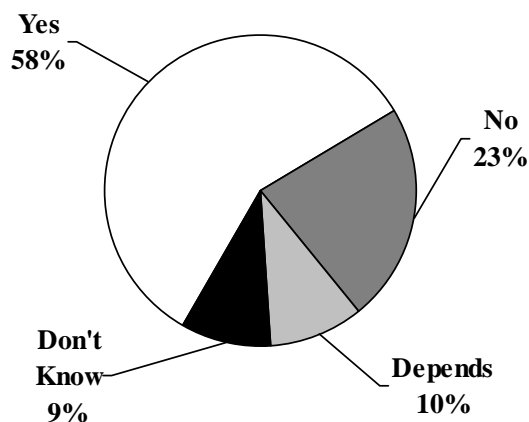
IF NECESSARY, HOW MUCH EXTRA WOULD YOU BE WILLING TO PAY SO YOU COULD RECYCLE?



Agreement that Manufacturers Should Share Responsibility for Recycling

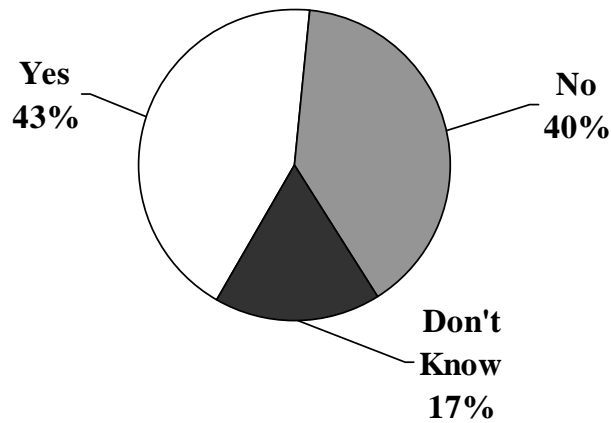
Fifty-eight percent of the Missourians surveyed say manufacturers should share in the responsibility of recycling or disposing of the products they sell to consumers.

SHOULD MANUFACTURERS SHARE IN THE RESPONSIBILITY OF RECYCLING OR DISPOSING OF THE PRODUCTS THEY SELL TO CONSUMERS?

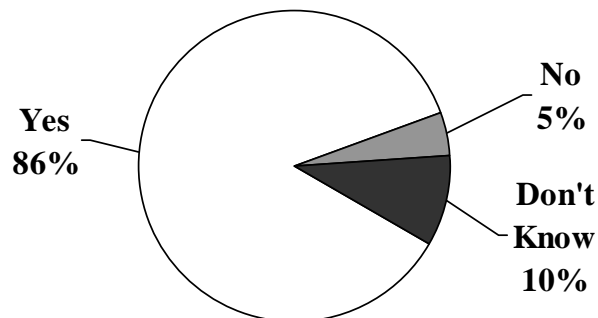


Support for Increasing Disposal Costs to Make Other Alternatives More Cost Effective

Missourians surveyed are nearly evenly divided regarding whether disposal costs (fees) should be increased to make the other alternatives more cost effective (43% say 'yes' and 40% say 'no').

DO YOU THINK THAT DISPOSAL COSTS (FEES) SHOULD BE INCREASED TO MAKE THE OTHER ALTERNATIVES MORE COST EFFECTIVE?**Support for Use of Ground Waste Tires as an Ingredient for Highway Pavement**

Eighty-six percent of Missourians surveyed support the increased use of ground waste tires as an ingredient in asphalt for paving highways.

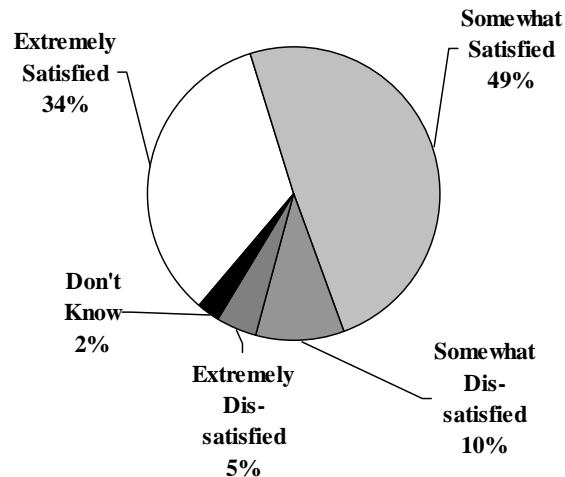
SHOULD MISSOURI SUPPORT THE INCREASED USE OF GROUND WASTE TIRES AS AN INGREDIENT IN ASPHALT FOR PAVING HIGHWAYS?

Availability of Trash Collection and Satisfaction with Trash Disposal Options

Ninety percent of Missouri households surveyed are served by trash collection.

Most Missourians surveyed report they are satisfied with their current form of trash removal. Thirty-four percent are “extremely satisfied” and the mean is 3.2 (*on a scale where 1 = “Extremely dissatisfied” and 4 = “Extremely satisfied”*).

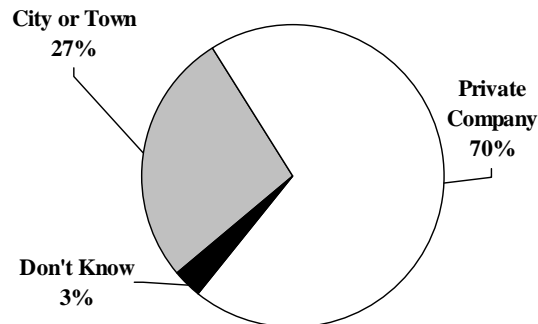
HOW SATISFIED ARE YOU WITH YOUR CURRENT FORM OF TRASH DISPOSAL?



Trash Disposal Provider

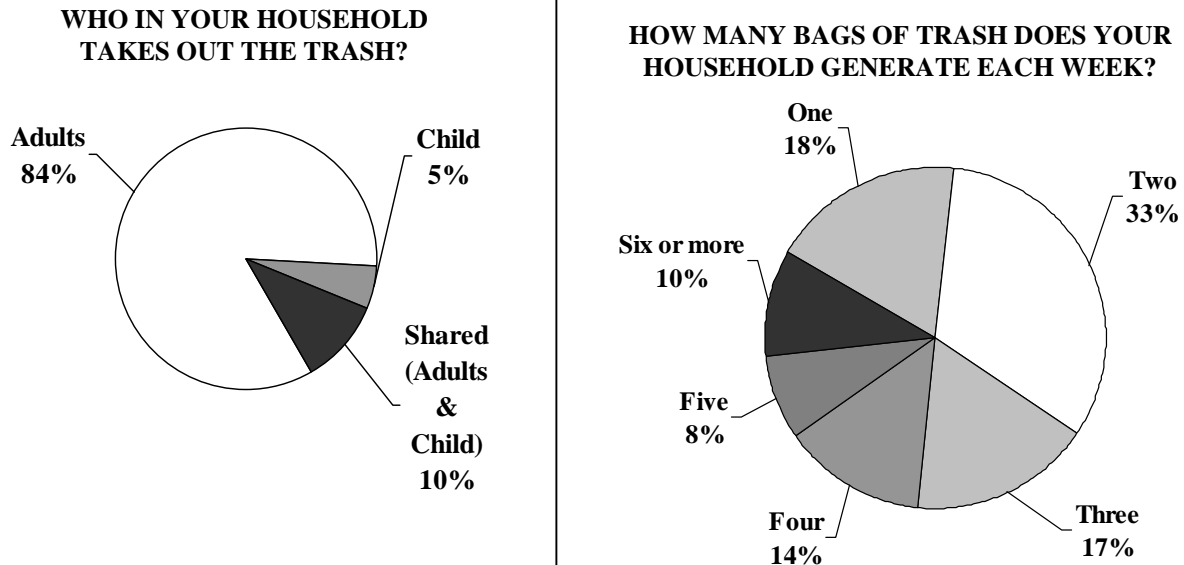
Seventy percent of surveyed Missourians who have trash pickup (n=562) say their trash is collected by a private company, while 27 percent receive the service from their city or town.

IS YOUR TRASH COLLECTED BY A PRIVATE COMPANY, OR PROVIDED BY THE CITY OR TOWN?



Household Member(s) Responsible for Taking Out the Trash

Eighty-four percent of Missourians surveyed report that adults are responsible for taking out the trash.

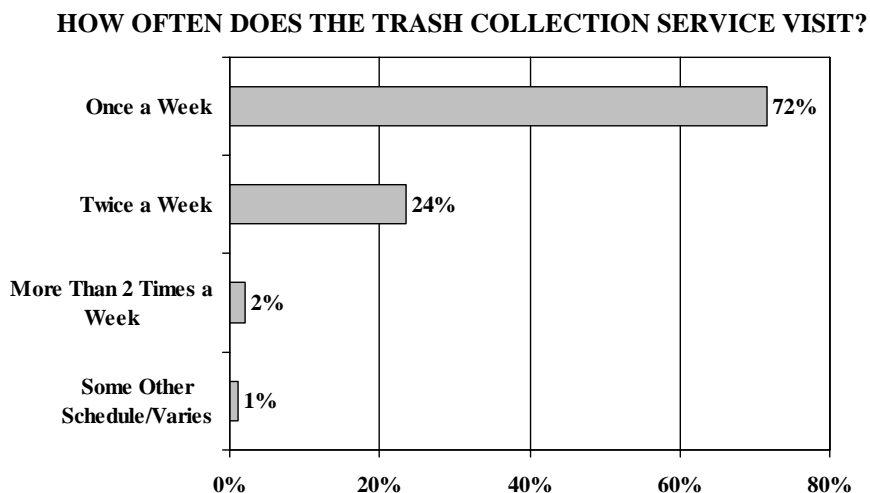


Average Amount of Trash Generated by Missouri Households

Overall, the average household surveyed generates about three bags of trash per week. Thirty-three percent of households put out two bags, and 52 percent generate one or two bags per week.

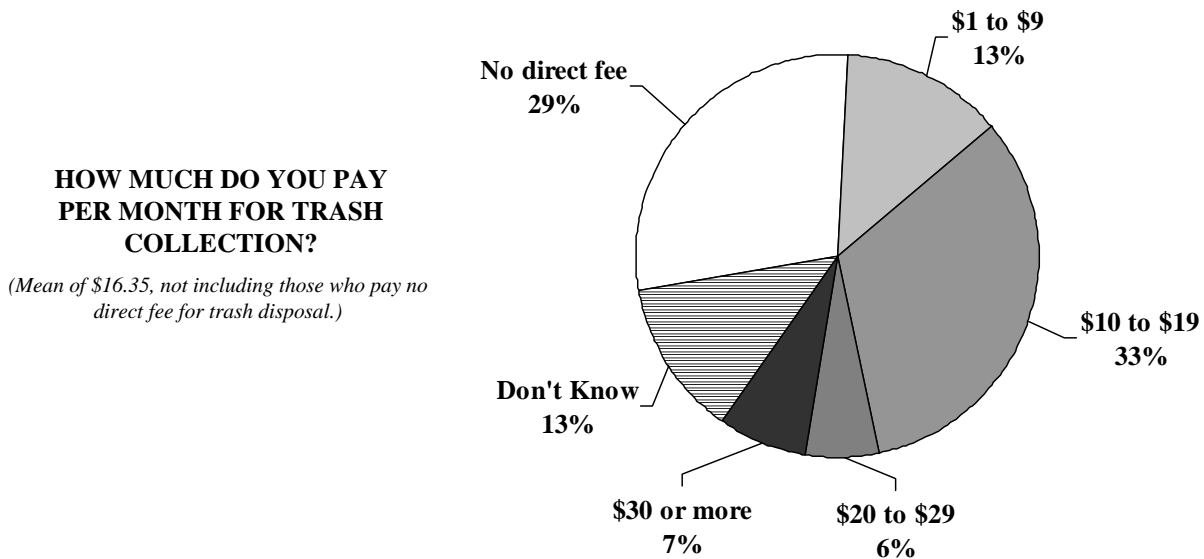
Frequency of Trash Pickup Among Missouri Households

Among surveyed Missourians with trash pickup (n=562), 72 percent have trash pickup once a week, while 24 percent have pickup two times per week. The average (mean) is 1.3 pickups per week.



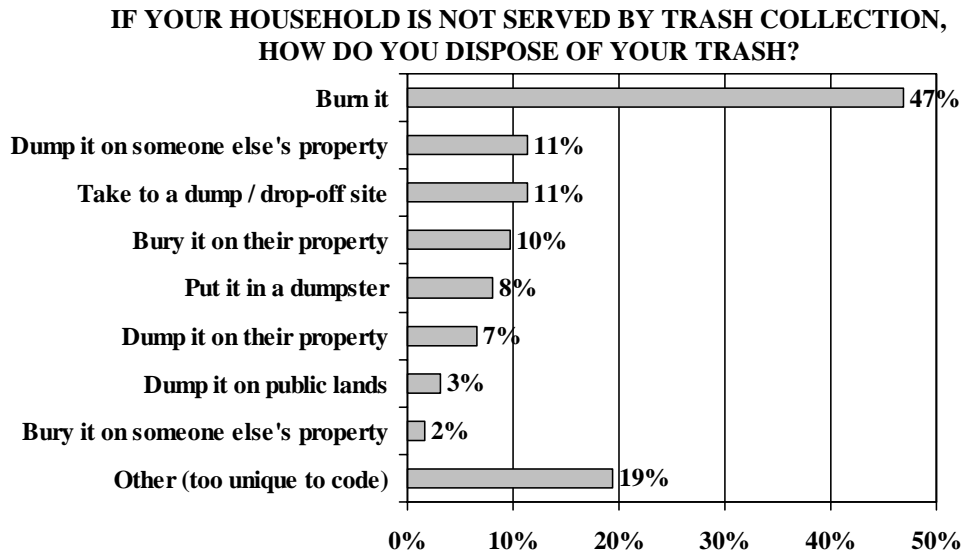
Average Monthly Fee for Trash Collection

On average, surveyed Missourians with trash pickup (n=562) pay \$16 a month for trash collection, while 29 percent pay no direct fee (the charge is included in their rent, taxes or some other fee).



Disposal Methods for Households Without Trash Collection

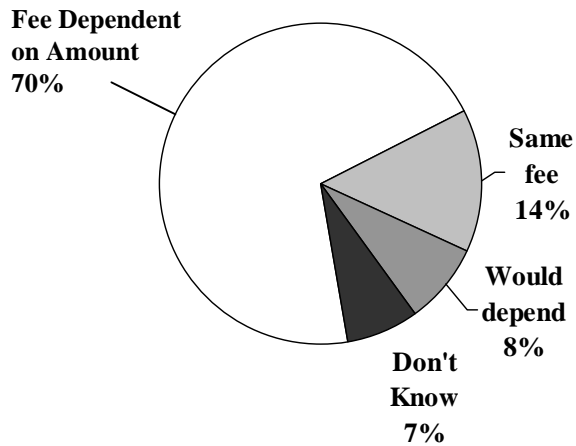
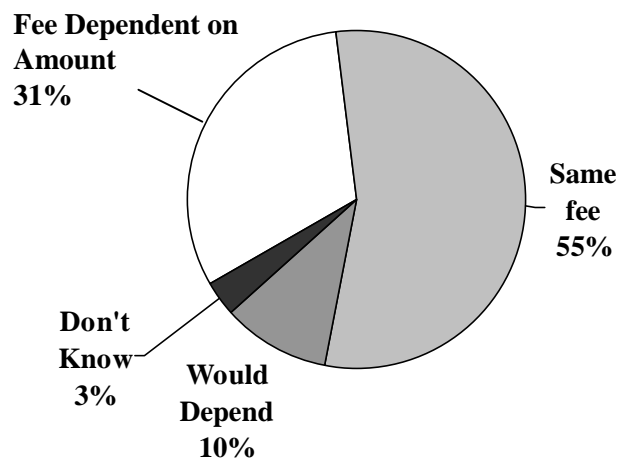
Among surveyed Missourians who do not have trash collection (n=62), 47 percent say they dispose of their trash by burning it.



Attitudes Regarding Trash Collection Fees Being Based on Volume

Seventy percent of the respondents in Missouri say businesses should be charged based on the amount of trash they produce.

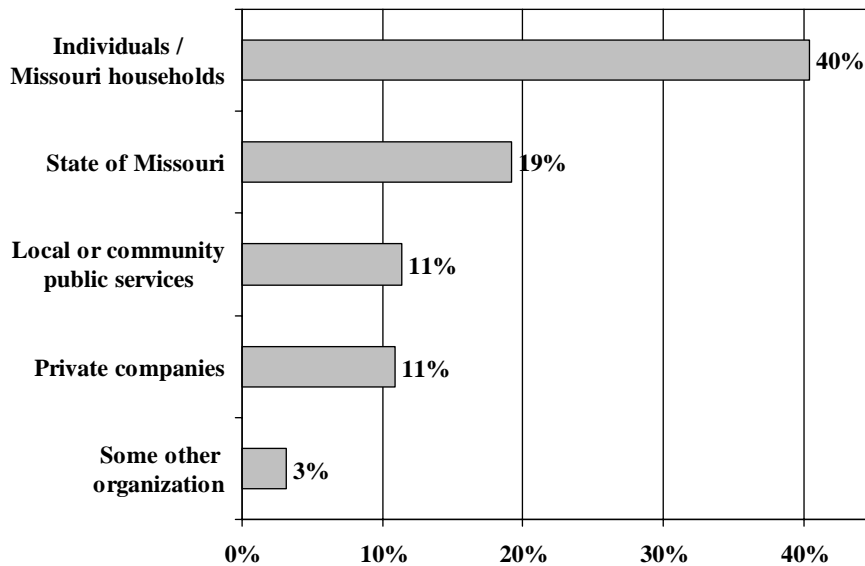
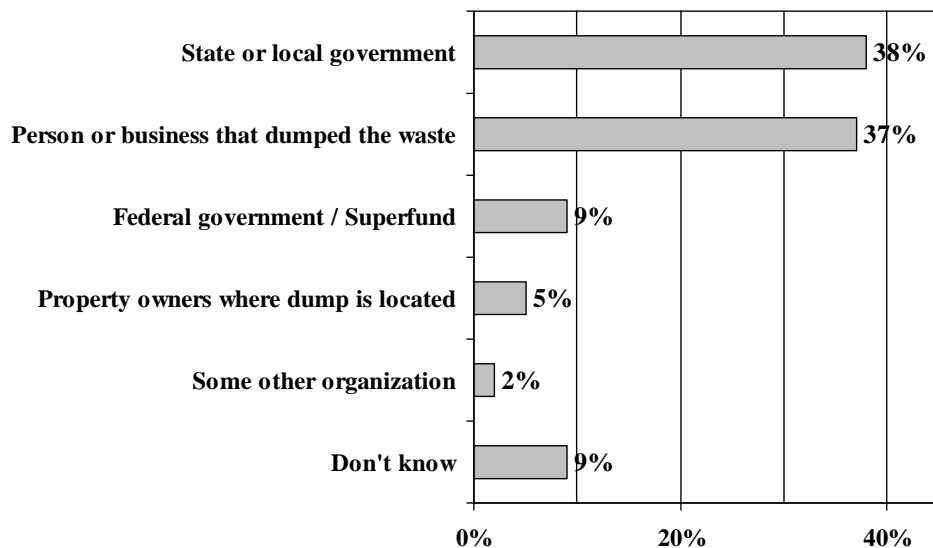
Thirty-one percent of the respondents, however, say that consumers should be charged based on the amount of trash produced. Fifty-five percent say all residential households should be charged the same.

**SHOULD TRASH COLLECTION FEES
FOR BUSINESSES BE BASED ON
HOW MUCH TRASH THEY PRODUCE OR
SHOULD THERE BE A SET FEE?****SHOULD TRASH COLLECTION FEES FOR
HOUSEHOLDS BE BASED ON HOW MUCH
TRASH THE HOUSEHOLD PRODUCES OR
SHOULD THERE BE A SET FEE?**

Attitudes Regarding Responsibility for Solid Waste Cleanup

Forty percent of Missourians surveyed say that individual households should be responsible for disposal of solid waste and trash. Nineteen percent say it is the responsibility of the state of Missouri.

Regarding the cleanup of illegal dump sites, Missourians surveyed are equally likely to say either the state or local government (38%) or the person or business that dumped the waste (37%) should bear the greatest responsibility.

**WHO SHOULD HAVE THE GREATEST RESPONSIBILITY
FOR DISPOSING OF MISSOURI'S SOLID WASTE AND TRASH?****WHO DO YOU THINK SHOULD HAVE THE GREATEST RESPONSIBILITY
FOR CLEANING UP MISSOURI'S ILLEGAL DUMP SITES?**

APPENDIX

SURVEY INSTRUMENT

State of Missouri – Solid Waste Management Study

Hello, my name is _____ from Pragmatic Research. Today we are calling on behalf of the state of Missouri to ask a few questions about issues that affect you. This is NOT a sales call; the information you provide will help them improve the services they offer. Are you an adult head of the household, 18 years or older?

IF NO, ASK TO SPEAK TO AN ADULT HEAD OF HOUSEHOLD
IF YES, CONTINUE

Q1. I am going to read a list of six issues. Please tell me which one is MOST important, 2nd most important, and 3rd most important. Please do not answer until I have read all six items.

ROTATE/RANDOMIZE LIST. ACCEPT UP TO 3 ANSWERS.

1. The economy
2. Safety, crime and crime prevention
3. Social services
4. The environment
5. Education
6. Health Care
7. NONE ARE IMPORTANT
8. DON'T KNOW/REFUSED --- NO MORE ANSWERS

Q2. For each of the following topics, please rate whether or not they are currently an environmental problem in Missouri. Please answer using a scale where 1 means the topic is "Not at all a problem" and 5 means the topic is an "Extremely serious problem." [6 = "Don't know/Refused"]

ROTATE/RANDOMIZE LIST

- | | |
|------------------------------------------------------------|--|
| A. The quality of drinking water | |
| B. The management and disposal of solid waste | |
| C. Urban and suburban growth | |
| D. Air quality | |
| E. Soil erosion | |
| F. Water quality in Missouri's lakes, rivers, and streams. | |
| G. Loss of fish and wildlife habitat | |
| H. Disposal of sewage | |
- Answer Options:
1=Not at all a problem
2
3
4
5=Extremely serious problem
6=Don't Know

- Q3. How good of a job is the Department of Natural Resources doing in preserving and protecting the state's natural, cultural and energy resources? Would you say...
1. "Poor,"
 2. "Fair"
 3. "Good," or
 4. "Excellent"?
 5. Don't Know/Refused [SOMEWHAT FAMILIAR WITH THE DNR.]
 6. NOT AT ALL FAMILIAR WITH DEPARTMENT OF NATURAL RESOURCES
- Q4. **[ASK ONLY IF RESPONDENT IS FAMILIAR WITH DNR]** How good of a job is the Department of Natural Resources doing in inspiring the enjoyment and responsible use of the state's natural resources? Would you say...
1. "Poor,"
 2. "Fair"
 3. "Good," or
 4. "Excellent"?
 5. Don't Know/Refused
- Q5. What first comes to your mind when I use the terms "solid waste"? *[DO NOT READ ACCEPT UP TO 5 ANSWERS.][DO NOT PROBE FOR MORE THAN ONE ANSWER.]*
1. ANIMAL WASTE
 2. DUMP
 3. FLIES
 4. GARBAGE
 5. RATS
 6. SEWAGE
 7. SLUDGE
 8. SMELL/STENCH
 9. TRASH
 10. OTHER (CAPTURE RESPONSE)
 11. DON'T KNOW/REFUSED --- NO MORE ANSWERS
- Q6. **[ASK ONLY IF RESPONDENT IS FAMILIAR WITH DNR.]** The state defines 'solid waste' as the trash created at home or at work *other than* liquid sewage. Based on that definition, how good of a job is the Department of Natural Resources doing in making sure that solid waste is properly managed? Would you say...
1. "Poor,"
 2. "Fair"
 3. "Good," or
 4. "Excellent"?
 5. Don't Know/Refused

- Q7 For each of the following issues, please rate whether or not they are an environmental problem in Missouri. Please answer using a scale where 1 means the issue is “Not at all a problem” and 5 means the issue is an “Extremely serious problem,” or 0 if you don’t know.

ROTATE/RANDOMIZE LIST

- | | |
|----------------------------------------------------------------------------------------|-------------------------------|
| A. Burning trash by commercial incinerators | <u>Answer Options:</u> |
| B. Burying trash in landfills | 1 1=Not at all a problem |
| C. Disposal of hazardous household chemicals, such as paints, solvents or weed killers | 2 |
| D. Illegal dumping of waste tires | 3 |
| E. Individuals burning their own trash | 4 |
| F. Individuals disposing of their trash on their own property | 5 5=Extremely serious problem |
| G. Individuals dumping their trash on other people’s property | 6=Don’t Know/Ref |
| H. Individuals dumping their trash on public lands | |
| I. Litter in Missouri | |

- Q8. How do you get information about current issues related to solid waste? (*RANDOMIZED LIST ITEMS 1-5. DO NOT READ LIST. ACCEPT UP TO 5 ANSWERS.*)

1. NEWSPAPER
2. TELEVISION
3. INTERNET
4. RADIO
5. NEWSLETTER / MAGAZINE / PUBLICATION
6. OTHER (CAPTURE RESPONSE)
7. NONE / NOT AT ALL FAMILIAR WITH ISSUES
8. DON’T KNOW/REFUSED ----- NO MORE ANSWERS

TRASH SECTION =====

- Q9. Who in your household has responsibility for taking out the trash? [*DO NOT READ*]

1. CHILD OR CHILDREN
2. ADULTS
3. SHARED (ADULTS AND CHILDREN)
4. DON’T KNOW/REFUSED

- Q10: How satisfied are you with the options you currently have to dispose of your trash? Are you...

1. Extremely dis-satisfied
2. Somewhat dis-satisfied
3. Somewhat satisfied, or
4. Extremely satisfied?
5. Don’t Know/Refused

Q11. About how many bags of trash does your household generate each week? (ON AVERAGE)?

[CAPTURE A NUMBER BETWEEN ZERO (NONE) AND 20. DK/REFUSED = 99.]

Q12: Is your household served by trash collection? *[DO NOT READ]*

1. YES
2. NO [SKIP TO Q.16]
3. DON'T KNOW/REFUSED

Q13: **[ASK IF THEY HAVE TRASH COLLECTION]** How often do they come? (I.E., HOW OFTEN IS YOUR HOUSEHOLD SERVED BY TRASH COLLECTION?) *[DO NOT READ]*

1. ONCE A WEEK
2. TWICE A WEEK
3. MORE THAN 2 TIMES A WEEK
4. SOME OTHER SCHEDULE/VARIES/DEPENDS (CAPTURE RESPONSE)
5. DON'T KNOW/REFUSED

Q14: **[ASK IF THEY HAVE TRASH COLLECTION]** About how much do you pay per month for trash collection? *[IF THEY PAY QUARTERLY, DIVIDE BY 4.]*

[CAPTURE A NUMBER BETWEEN \$0 (NOTHING) AND \$98. DK/REFUSED = 99.]

Q15: **[ASK IF THEY HAVE TRASH COLLECTION]** Is your trash collected by a private company, or provided by the city or town? *[IF ASKED: TRASH ONLY, NOT RECYCLEABLES.] [DO NOT READ LIST]*

1. PRIVATE COMPANY
2. CITY OR TOWN
3. DON'T KNOW/REFUSED

Q16: **[ASK ONLY IF RESPONDENT DOES NOT HAVE TRASH COLLECTION]** How do you dispose of your trash? Please be assured that your response is anonymous. *(RANDOMIZE LIST. DO NOT READ LIST. ACCEPT UP TO 3 RESPONSES.)*

1. BURN IT
2. BURY IT ON SOMEONE ELSE'S PROPERTY
3. BURY IT ON THEIR PROPERTY
4. DUMP IT ON PUBLIC LANDS
5. DUMP IT ON SOMEONE ELSE'S PROPERTY
6. DUMP IT ON THEIR PROPERTY
7. OTHER (CAPTURE RESPONSE)
8. DON'T KNOW/REFUSED --- NO MORE ANSWERS

Q17: Do you think trash collection fees for BUSINESSES should be based on how much trash they produce, *or* should all businesses be charged the same amount? *[DO NOT READ.]*

1. COST SHOULD VARY DEPENDING ON HOW MUCH TRASH A BUSINESS PRODUCES
2. THE SAME FEE SHOULD BE CHARGED TO ALL BUSINESSES
3. DEPENDS
4. DON'T KNOW/REFUSED

Q18: For residential households, do you think trash collection fees should be based on how much trash a household produces, *or* should all households be charged the same amount? *[DO NOT READ.]*

1. COST SHOULD VARY DEPENDING ON HOW MUCH TRASH A HOUSEHOLD PRODUCES
2. THE SAME FEE SHOULD BE CHARGED TO ALL HOUSEHOLDS
3. DEPENDS
4. DON'T KNOW/REFUSED

RECYCLING SECTION =====

Q19. What does your household typically recycle?
[DO NOT READ LIST. ACCEPT UP TO 5 ANSWERS.]

1. ALUMINUM CANS
2. CARDBOARD
3. CEREAL AND OTHER (SHINY) BOXES
4. GLASS
5. MAGAZINES
6. NEWSPAPER
7. PLASTIC CONTAINERS
8. SCRAP METAL, SUCH AS COPPER OR BRASS
9. STEEL FOOD CANS
10. OTHER (CAPTURE RESPONSE)
11. NOTHING **(SKIP TO "DO YOU BUY RECYCLED?")**
12. DON'T KNOW/REFUSED --- NO MORE ANSWERS

Q20. **[ASK IF THEY RECYCLE.]** Who in your household participates in recycling?
[DO NOT READ LIST]

1. CHILD OR CHILDREN
2. ADULTS
3. SHARED (ADULTS AND CHILDREN)
4. DON'T KNOW/REFUSED

Q21. **[ASK IF THEY RECYCLE.]** What is the main reason your household recycles?
(RANDOMIZED LIST. DO NOT READ LIST. ACCEPT UP TO 5 ANSWERS.)

1. CONSERVES RESOURCES
2. FAMILY ACTIVITY
3. FOR THE MONEY
4. LAND FILL SPACE IS LIMITED
5. REQUIRED BY LAW
6. TEACHES GOOD VALUES / ENCOURAGES CONCERN FOR ENVIRONMENT
7. OTHER (CAPTURE RESPONSE)
8. DON'T KNOW/REFUSED – NO MORE ANSWERS

Q22: **[ASK IF THEY RECYCLE.]** Do you have curbside recycling or do you take it to a drop-off? [DO NOT READ LIST.]

1. CURBSIDE RECYCLING
2. TAKE IT TO A DROP-OFF
3. BOTH
4. NEITHER
5. DON'T KNOW/REFUSED

Q23: Does your household try to buy items made from recycled materials? [DO NOT READ.]

1. Yes
2. No
3. Don't know/Refused

Q24: **[ASK IF HOUSEHOLD BUYS RECYCLED]** Which items? (DO YOU MAKE A SPECIAL EFFORT TO BUY RECYCLED.) (DO NOT READ LIST. ACCEPT UP TO 5 RESPONSES.)

1. ANY ITEM THAT COMES IN A RECYCLED PACKAGE/BOTTLE/BOX
2. NAPKINS
3. PAPER TOWELS
4. TOILET PAPER
5. OTHER ITEMS (CAPTURE RESPONSE)
6. DON'T KNOW/REFUSED – NO MORE ANSWERS

Q25. Do you think products made from recycled materials offer the same quality as products made from new materials, better quality, or worse quality? [DO NOT READ.]

1. RECYCLED PRODUCTS ARE BETTER
2. RECYCLED PRODUCTS OFFER SAME QUALITY
3. RECYCLED PRODUCTS ARE WORSE
4. DON'T KNOW/REFUSED

Q26. **[IF HOUSEHOLD DOES RECYCLE]** What would make your household recycle more? (THAN IT DOES CURRENTLY, EITHER IN NUMBER OF ITEMS, OR TYPES OF ITEMS)? *[DO NOT READ LIST. ACCEPT UP TO 5 RESPONSES]*

1. CHARGE DEPOSIT / FEE ON STORE ITEMS (CANS, BOTTLES, ETC.)
2. CURBSIDE PICKUP OF RECYCLE-ABLES
3. LAW REQUIRING RECYCLING
4. PAY MORE FOR RECYCLING (PAY MORE PER POUND FOR ALUMINUM, ETC.)
5. KNOWING WHERE RECYCLING CENTERS ARE
6. PROACTIVE ADS
7. CHARGE MORE FOR TRASH DISPOSAL THAN FOR RECYCLING
8. PROVIDE BINS FOR STORING RECYCLE-ABLE MATERIALS
9. RECYCLING CENTERS -- CLOSER / MORE CONVENIENT LOCATION
10. RECYCLING CENTERS – MORE LOCATIONS
11. RECYCLING CENTERS – LONGER HOURS
12. OTHER -- RECYCLING IS MESSY
13. OTHER -- WASTE OF TIME – RECYCLED MATERIALS DUMPED IN LANDFILL, ANYWAY
14. SOME OTHER REASON (CAPTURE RESPONSE)
15. NOTHING CAN BE DONE TO INCREASE RECYCLING
16. DON'T KNOW/REFUSED – NO MORE ANSWERS

Q27. **[IF HOUSEHOLD DOES NOT RECYCLE]** What would make your household recycle? *[DO NOT READ LIST][ACCEPT UP TO 5 RESPONSES]*

1. CHARGE DEPOSIT / FEE ON STORE ITEMS (CANS, BOTTLES, ETC.)
2. CURBSIDE PICKUP OF RECYCLE-ABLES
3. LAW REQUIRING RECYCLING
4. PAY MORE FOR RECYCLING (PAY MORE PER POUND FOR ALUMINUM, ETC.)
5. CHARGE MORE FOR TRASH THAN FOR RECYCLING
6. PROVIDE BINS FOR STORING RECYCLE-ABLE MATERIALS
7. RECYCLING CENTERS -- CLOSER / MORE CONVENIENT LOCATION
8. RECYCLING CENTERS – MORE LOCATIONS
9. RECYCLING CENTERS – LONGER HOURS
10. OTHER -- RECYCLING IS MESSY
11. OTHER -- WASTE OF TIME – RECYCLED MATERIALS DUMPED IN LANDFILL, ANYWAY
12. SOME OTHER REASON (CAPTURE RESPONSE)
13. NOTHING CAN BE DONE TO INCREASE RECYCLING
14. DON'T KNOW/REFUSED --- NO MORE ANSWERS

Q28 **[ASK IF THEY RECYCLE]** If necessary, how much extra would you be willing to pay so you could recycle?

1. Nothing
2. \$1- \$1.99 per month
3. \$2 - \$3.99 per month
4. \$4 - \$9.99 per month
5. \$10 or more
6. DEPENDS
7. DON'T KNOW/REFUSED

YARD WASTE SECTION =====

Q29: Does your household have any gardens, grass, trees, or shrubs? *[DO NOT READ]*

1. YES
2. NO
3. DON'T KNOW/REFUSED

Q30: **[ASK ONLY IF THEY HAVE YARD WASTE.]** What do you typically do with the yard or garden wastes? *[DO NOT READ LIST. ACCEPT UP TO 5 ANSWERS.]*

1. A PROFESSIONAL LAWN SERVICE TAKES CARE OF YARD
2. BURN IT
3. COLLECT AND PILE THE MATERIALS IN YOUR YARD
4. COMPOST THE MATERIALS IN YOUR YARD
5. DISPOSE OF THEM IN THE TRASH
6. GATHER AND DISPOSE OF USING A CURBSIDE YARD WASTE PICKUP PROGRAM
7. GATHER AND TAKE TO A COMPOST DROP-OFF SITE
8. LEAVE MATERIALS WHERE THEY FALL
9. MULCHING
10. OTHER (CAPTURE RESPONSE)
11. DON'T KNOW/REFUSED --- NO MORE ANSWERS

Q31: Does anyone in your household compost kitchen waste (IF ASKED, SUCH AS COFFEE GROUNDS, VEGETABLE SCRAPS, ETC.)? *DO NOT READ*

1. YES
2. NO
3. DON'T KNOW/REFUSED

MISCELLANEOUS SECTION =====

Q32. Should manufacturers share in the responsibility of recycling or disposing of the products they sell to consumers? *[DO NOT READ LIST]*

1. YES
2. NO
3. DEPENDS ON THE PRODUCT
4. DON'T KNOW/REFUSED

Q33: Who do you think should have the greatest responsibility for disposing of Missouri's solid waste and trash? *[DO NOT READ LIST. SINGLE RESPONSE.]*

1. INDIVIDUALS / MISSOURI HOUSEHOLDS
2. LOCAL OR COMMUNITY PUBLIC SERVICES
3. PRIVATE COMPANIES
4. STATE OF MISSOURI
5. SOME OTHER ORGANIZATION (CAPTURE RESPONSE)
6. DON'T KNOW/REFUSED

Q34: Who do you think should have the greatest responsibility to clean up Missouri's illegal dump sites? *[DO NOT READ LIST. SINGLE RESPONSE.]*

1. FEDERAL / NATIONAL GOVERNMENT OR NATIONAL CLEANUP SUPERFUND
2. PROPERTY OWNERS WHERE THE DUMP IS LOCATED
3. STATE OR LOCAL GOVERNMENT
4. THE RESPONSIBLE PERSON OR BUSINESS THAT DUMPED THE WASTE THERE
5. SOME OTHER ORGANIZATION (CAPTURE RESPONSE)
6. DON'T KNOW/REFUSED

Q35. Recycling and other alternatives to landfills are not cost effective, in many cases. Do you think that disposal costs should be increased to make the other alternatives MORE cost effective? *[DO NOT READ.]*

1. YES
2. NO
3. DON'T KNOW/REFUSED

Q36. Currently, waste tires are being used primarily as a fuel source with some tires being ground up and used for playground materials. Should the state support the increased use of ground waste tires as an ingredient in asphalt for paving highways? *[DO NOT READ.]*

1. YES
2. NO
3. DON'T KNOW/REFUSED

The following questions will help us compare the answers of different groups. Your answers will be kept strictly confidential.

Q37: How many adults live in the household? (Enter a number between 1 and 8. DK=9)

Q38: How many children under 18 live in the household, not including children away at college or in the military? (Enter a number between 0 and 8. DK=9)

Q39: What type of dwelling do you live in? Is it...

1. A single-family house, or
2. A multi-unit apartment or condominium?
3. Some other type of dwelling
4. Don't Know/Refused

Q40: Would you describe your neighborhood as...

1. Downtown or urban,
2. Suburban, or
3. Rural?
4. Don't Know/Refused

Q41: In what year were you born? [CAPTURE BETWEEN (19)0 AND (19)82. DK = 99]

Q42: What was the last grade of school you, yourself, had the opportunity to complete? **(IF NECESSARY, READ LIST)**

1. Grade school or less (0-8)
2. Some high school (9-11)
3. High school graduate (12)
4. Some college or trade school (13-15)
5. College graduate (16)
6. Post graduate (17+)
7. Refused

Q43: Which of the following categories includes the approximate total annual income of your household?

1. Under \$15,000
2. \$15,000 but less than \$25,000
3. \$25,000 but less than \$35,000
4. \$35,000 but less than \$50,000
5. \$50,000 but less than \$75,000
6. \$75,000 or over
7. Refused

Q44: Just to be sure we are talking to a cross section of people, which of the following best describes your ethnic background?

1. White
2. African-American
3. Hispanic
4. Asian
5. Or, some other
6. Refused

That's all the questions I have. Thank you for your time.

Record gender of the respondent.

1. Male
2. Female

Enter Phone Number from sample.

Enter ZIP code from sample.

Enter County Quota (1-20) from sample.

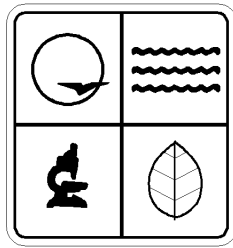
Select Quota County Sub-Type (customized per 20 quota groups) from sample.

Capture month and day of interview.

Record page number of sample.

Capture interviewer name.

**Missouri Department of Natural Resources
Division of Environmental Quality
Solid Waste Management Program**



1738 East Elm Street
Jefferson City, MO 65101-0176
1(800) 361-4827 or (573) 751-5401

PUB002086



APPENDIX F

STAKEHOLDER GROUP INPUT

APPENDIX F

STAKEHOLDER GROUP INPUT

1. Residential Waste Stakeholder Group

Residential Waste Stakeholder Group Draft Plan Input

On May 23-24, 2001, members of the Residential Waste Stakeholder Group (RWSG) participated in a two day work session. The purpose of this work session was to bring together individuals with diverse viewpoints and experiences regarding residential solid waste management so that, through a facilitated process, they would provide input for the Missouri Solid Waste Management Plan. The session facilitators were Mr. Jerry Wade and Mr. John Tharp, with University of Missouri Extension and Outreach. Staff from the Missouri Department of Natural Resources' Solid Waste Management Program attended, mainly as observers and to manage meeting logistics.

I. Purpose

RWSG members were asked to draft a *Purpose statement* that expressed the reason for developing a residential solid waste management plan. The statement should help guide the development of plan components.

The Purpose statement developed by the RWSG:

The purpose of a residential solid waste management plan is to contribute to the health, well-being and quality of life, at every level of society, by the development of solid waste management systems which are economically, politically, socially, and environmentally effective and efficient.

II. Values and Beliefs

Following development of the purpose statement, RWSG members were asked to express their *Values and Beliefs* regarding management of residential solid waste. The values and beliefs put forth should reflect the principles and guiding factors that undergird people's decisions and actions. This step helped each member think about the foundation for their own decision making, as well as that of the larger group or society as a whole. Developing the purpose, values and beliefs as a group helped the stakeholders build a common ground of understanding and a realization that "we are all in this together."

The values and beliefs expressed by members of the RWSG were these:

- It is the residents' perspective that residential solid waste collection programs are "out of sight, out of mind."
- An efficient residential solid waste management plan includes the 3R's (reduce, reuse and recycle) and must provide services which are affordable for citizens, accessible to all and economically sustainable to providers.

- Change is difficult.
- A clean and beautiful environment is preferable to illegal dump sites and litter, and contributes to property values.
- Education about solid waste management is important and should be included in a residential solid waste plan.
- Government is responsible for ensuring proper solid waste management.
- One size does not fit all.
- Clean air and clean water contribute to a healthy public.
- The residential solid waste collection program fee should be clearly stated to the resident (consumer).
- Waste has to go somewhere.
- Protecting the environment is important.
- People are more likely to make good decisions if they are informed.
- A residential solid waste plan should not include disincentives for people to do the responsible thing.

III. Visions, Actions and Policies organized by Themes:

Vision tells us where we are going; it is our overall sense of direction, the destination. The RWSG was asked to imagine the type of residential waste management system that would be in place in the year 2021, assuming that the best residential waste plan had been developed and implemented between now and then. The end product of this activity is a series of vision statements. Ultimately, the Vision process is fruitful when it leads to development of specific actions that will enable the Vision to be realized.

Vision Themes, or clusters, are groupings of visions with some thread of commonality. The RWSG came up with four themes under which the majority of vision statements would naturally fall. These were:

1. Logistics of waste
2. System management
3. Education
4. Economics

The vision themes could then become the connection to action. In a sense, vision themes can be viewed as action areas. *Actions* are the things that need to be done to move from the present toward one or more of the visions in a vision theme. In solid waste management, many of the needed actions in turn indicate a need for a change in policy or adoption of new policies. For this reason, policies are listed separately from other types of actions.

Group members chose one theme to work with, forming four smaller groups. Each of the four groups developed a list of actions under their chosen theme. This document lists the vision statements as they were grouped under the four themes, followed by the actions and policies that were proposed. Each group was asked to reference the vision statement that would be addressed by the proposed action. This is indicated by a number or series of numbers, in brackets [], following each action, that refer to the list of vision statements in that theme.

Theme 1. Logistics of waste

A. *Visions, year 2021*

1. Trash haulers are looked upon with favor and admiration
2. Waste reduction goals: (three different vision statements from original list)
 - waste generation at 1 pound per person, per day
 - waste generation at 2.5 pounds per person, per day
 - 30% waste diversion
3. All residential solid waste programs are self-funding
4. All landfills are (federal) Subtitle “H” or better
5. Adequate demolition landfills
6. Same truck collects trash and recyclables in one pass
7. All organics are composted in backyard
8. Environmental incentives: deposits on throw away containers
9. Mandatory trash collection and recycling
10. Free, convenient recycling throughout the state
11. 100% participation in all elements of integrated solid waste management system
12. Volume-based trash collection throughout the state
13. Environmental education is part of culture

B. *Actions*

- volume-based collection [12]
- incentives-deposits/bottles [8]
- continued education-waste reduction methods/benefits [1, 2, 13]
- change packer trucks to pick up separated recyclables [6]
- limit waste per household [7, 11, 2]
- more C&D (construction and demolition) landfills, continued compliance [4, 5]
- provide services in all areas of the county, i.e. Green box systems [9, 11, 10, 3]

C. *Policies*

- Missouri (city/government) value and encourage sound waste management practices, including waste reduction
- Toward that end-
 - * State mandates
 - * Local implementation /enforcement and education
 - * Every household must have trash/recycling services
 - * Waste reduction incentives: (Deposits/limits on household trash / volume-based)
 - * Sufficient and compliant disposal facilities

Theme 2. System Management

A. *Visions, year 2021*

1. Volume-based trash collection throughout the state
2. 100% participation in all elements of an integrated solid waste management system
3. Mandatory trash collection and recycling
4. Government becomes most effective recycler in the state
5. Missouri is the leading state in waste management
6. HHW chemicals are replaced by non-toxic alternatives
7. No residential trash burning
8. Manufacturers are responsible for disposal or recycling their products
9. Adequate demolition landfills
10. Effective anti-litter and illegal dumping campaigns throughout Missouri
11. DNR has 20 employees
12. Trash free streams and clean and beautiful countryside
13. All landfills are (federal) Subtitle "H" or better

B. *Actions*

- Funding sources put in place for illegal dumping and litter [12, 10, 2]
- Change voters perspective → legislative action [1, 2, 3, 6, 7, 8]
- Change enforcement priorities [10, 12, 7]
- Regulators concentrate on long-term solutions [ALL]
- DNR ease/strengthen regulations [9, 13]
- Preach/do good neighbor policy, practice what you preach [10, 4, 12, 7]

C. *Policies*

- Advocate environmentally friendly manufacturing and packaging practices.
- All entities have access to solid waste and recycling services
- Reasonable regulations that are enforceable
- Find common values that can lead to realistic goals.

Theme 3. Education

A. *Visions, year 2021*

1. Waste reduction goals: waste generation at 1 pound per person, per day; waste generation at 2.5 pounds per person, per day; 30% waste diversion
2. Environmental education is part of culture and Effective anti-litter and illegal dumping campaigns throughout the state
3. Trash free streams and clean and beautiful countryside
4. No residential trash burning
5. Government becomes most effective recycler in state
6. 100% participation in all elements of integrated solid waste management system

Theme 3. Education (continued)

B. *Actions*

- Appoint DNR state education coordinator [1,2,6]
- Develop uniform educational programs and standards for state [1,2,6]
- Teach how and why – cost versus return [1,2,6]
- Teach the 3Rs (reduce, reuse, recycle) [1,2,6]
- Statewide public education campaign to change behavior on solid waste management recycling and litter [1,2,3,4,6]
- Implementation of educational program through schools, communities, and businesses [1,2,6]
- Teach businesses how to recycle [1,6]
- Educational materials printed and distributed to above groups [1,2,3,4,6]
- Develop local programs on local solid waste management plan elements [1,2,4,6]
- Environmental education becomes part of core curriculum at all schools in all grade levels [1,2,3,4,6]
- Create an effective internal state government waste reduction and recycling program in all state offices [5]
- Coordinate consistency state-wide educational programs (added after initial list was made)

C. *Policies*

- DNR is responsible for developing partnerships among public and private entities to develop and administer state, regional, and local public awareness efforts designed to change environmental behavior.
- Funding for all programs.
- Environmental education becomes part of core curriculum at all schools in all grade levels.
- DNR is responsible for developing recycling programs for all state offices.

Theme 4. Economics

A. *Visions, year 2021*

1. All residential solid waste programs are self funding
2. Same truck collects trash and recyclables in one pass
3. Volume based trash collection throughout state
4. Mandatory trash collection and recycling
5. Efficient collections (not stated as one of the original vision statements)
6. Increase businesses and industries based on recycled products
7. Environmental incentives – has deposit on throw-away containers
8. Market(s) (for recyclables) are sustainable throughout the state

Theme 4. Economics (continued)

B. *Actions*

- Mandate some level of waste collection service [4]
- Economic incentives to encourage recycling and waste reduction [3]
- Change human behavior related to waste habits [7]
- Full cost and incremental cost analysis [1]
- Local ordinances [1, 8]
- Local area study [3]
- Pilot project [3]
- Develop neighbor leadership [3]
- Financial assistance for communities and private haulers for volume based collection programs [3]
- Periodic review of legislative impact on collection/disposal costs (local level) [1, 5]
- Periodic review of recyclable materials marketability [1, 8]
- Mandatory recycling [4]
- Standardize collection services [5]
- Tax incentives, grants for co-collection [5, 7]
- Local end-use market development [6]

C. *Policies*

- Require that each household subscribe to waste collection provided by a qualified waste collector.
- The waste collection system costs are itemized, disclosed and understandable.
- Implement pilot volume-based programs through existing grant programs.

Appendix 1

Residential Waste Stakeholder Group

The following individuals participated in the May 23-24, 2001, work session to provide input for the Missouri Solid Waste Management Plan on managing residential solid waste.

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TIMELINES

Members of the Residential Waste Stakeholders Group and DNR Solid Waste Management Program staff participated in a Timeline exercise at the start of the work session. In this exercise, everyone was asked to jot down significant events on a series of timelines. The three timelines were labeled Personal, National and Solid Waste Management. This exercise helped the group get to know each other, warm-up for the tasks to come and gain some perspective on the relationships of these three areas of their lives.

TIMELINE HEADING	1930's	1940's	1950's	1960's	1970's	1980's	1990's - Now
PERSONAL	1 st of several trip -Ill. to Calif. in Model A Ford- 7 yrs. old Lost \$12.00 savings in bank- Depression Parents born	Born Born Born Born Born Graduate from HS '42 Went in service - 3 yrs-'42-'45	Born Born High School Born Started school First bicycle Moved to Farm	Born High School Military & College Drafted! Graduate College Graduated High School Started work Marriage Came to USA Married Born Began formulating my stellar personality Born Married-Vietnam Graduated High School Good music Joined Navy (avoided draft) Graduated from College Military Service	Paid 1 st Income Taxes Married 1 st Moved to country College College Son born Started working Hawaii First real job Became US Citizen Grew up Got my first horse Navy Born Born Married Remarried Marriage Son Daughter born Left farm To College Motorcycle trip	Married #2 Marriage Moved to Missouri Son born Started own business Professional career College Divorce Remarried College Divorce Voted for Reagan-once Marriage & Kids Divorce Married Divorced (twice) Married (twice) Realized I was very cool High School High School /College /Marriage/Started SWM Career Farm sold New Job To College again	Got married and started generating waste BTG started Career change Career change Kids Moved to MO Son left home Retired Law Enf. Career- began SWM career Retired/volunteer Parent Grandchildren (many) Began work at DNR Son graduated from college Got my latest 50 horses Married/divorced/had kids Marriage Wife died Kids Kids Mother passed away Mid Life Crisis Added to house

TIMELINE HEADING	1930's	1940's	1950's	1960's	1970's	1980's	1990's - Now
NATIONAL	Rural electrification etc. Dust bowl End of the Wild West Shows (West becomes East) Depression	WWII Building boom Emergence of electronics Bomb Baby boom Women enter workforce in large numbers	Industrial growth Interstate highways Urban/Suburban growth 1 st TV dinners and TV, Transistors Sputnik Elvis Rock 'n Roll Howdy Doody	Drug culture Space race The Graduate "Plastics" Cuyahoga River burns Cuban missile crisis Beatles Vietnam Kennedy assassination Man on the Moon Beach Boys Silent Spring - Rachel Carson M.L. King assassinated Laugh-In Fall out shelters! Welfare program begins	DDT banned in US Clean Air, Water Acts Love Canal More Vietnam EPA created 1 st PC marketed Immigration Nixon Long hair Disco I don't remember Satellite news coverage around the world	President Reagan shot MTV mute Energy Crisis Interest rates soar Times Beach Clean Air, Water Act Reagan Era Immigration Chernobyl AIDS Nu wave Internet Punk	No "Gun" in school! HMO's Clinton era End of cold war Air bags Spy plane lands in China AIDS Shift to plastics Internet Immigration Federal budget surplus Times Beach becomes State Park Long hair Bell bottoms CNN Palm Pilot and cell phone Gulf War
SOLID WASTE MANAGEMENT	[1905 1 st Supreme Court decision on solid waste flow control] Hogs in dumps Fresh Kills landfill open (New York)	Refuse burned War time recycling	'51 flood in KC Open dumps Cities begin residential refuse collections You can swim in the lakes County Option Dumping Law	Clean up waterways 1 st sanitary landfills (in Missouri) Backyard burning Silent Spring (book by Rachel Carson) Swim at your own risk Solid Waste Disposal Act	Earth Day US EPA begins Awareness of energy, etc. being finite Environment becomes important State government reorganization – DNR was born State Solid Waste Management Law	Columbia Bottle Bill Started compost site '83 Purchased solid waste business Clean Air Act No pull top cans Garbage barge -late '80s 1 st KC MO curbside ballot	Subtitle D SB 530 KC drop-offs open 2 nd KC curbside ballot Product stewardship KC MO MRF contract signed and failed Trash train Solid waste district activities Bans Carbone decision Flow control struck down Spf. (Springfield) ISWMS voter approved x2 Pending interstate transport of solid waste issues Yard waste banned from l.f.'s Opened recycle business OSHA regs. Shift to plastics 3 rd KC curbside ballot Fresh Kills closes

APPENDIX F

STAKEHOLDER GROUP INPUT

2. Institutional Waste Stakeholder Group

Institutional Waste Stakeholder Group

Draft Plan Input

On October 10-11, 2001, members of the Institutional Waste Stakeholder Group (IWSG) participated in a two day work session. The purpose of this work session was to bring together individuals with diverse viewpoints and experiences regarding institutional solid waste management so that, through a facilitated process, they would provide input for the Missouri Solid Waste Management Plan. The session facilitators were Mr. Jerry Wade and Mr. John Tharp, with University of Missouri Extension and Outreach. Staff from the Missouri Department of Natural Resources' Solid Waste Management Program attended, mainly as observers and to manage meeting logistics.

At the beginning of the work session, Mr. Wade established these Ground Rules:

- Please remember—we are here to deliberate, not debate.
- Allow everyone time to participate, if they so choose.
- Remember to listen with respect—let people finish their statements.

Definition of Institutional Waste

Early in the work session, several group members asked for clarification of the term “Institutional Waste” from department staff to help them better focus their input. Prior to the work session, a specific definition had not been developed. Definitions that were looked at defined this waste stream by listing the type of generators, as in this definition from the *McGraw-Hill Recycling Handbook*, 2nd Ed.:

“Waste materials originating in schools, jails, hospitals, nursing homes, research institutions and public buildings. The materials include packaging materials, food wastes, and disposable products.”

However, entities that may be classified as institutions may also be considered commercial establishments, such as privately owned hospitals; they may have waste streams in common with some industries, such as from the production of manufactured goods by prison industries; they may be involved in construction activities, such as the state's Design and Construction Division within the Office of Administration. The common thread is that all institutions provide a service that society deems necessary for the public good, be it health care, education, law enforcement or safe drinking water. This perspective is shown in the definition from *Principles of Integrated Solid Waste Management*, published by the American Academy of Environmental Engineers:

“Solid wastes generated by social, charitable, and educational activities (Solid Waste Association of America 1991). (*Institution* is an organization or establishment devoted to the promotion of a cause or program, especially of a public, educational or charitable character; examples include schools, hospitals, universities, museums, prisons/reformatories, etc.; *institutional* would therefore be an organization that is structured so as to function in social, charitable and educational activities[Webster's 1996])”

Institutions were selected as a type of solid waste stakeholder to reflect the common factors that affect the way they manage waste. A public school, correctional facility or hospital will generate

waste similar to their private counterpart. Public institutions will have similar decision-making processes, regardless of their individual missions, that affect waste management choices. Privately owned institutions also share common decision-making priorities. And, as pointed out by group members, contracting of traditionally public services to private entities, blurs the line between them.

Agenda

The general agenda for the work session was posted:

- 1. Timelines**
- 2. Action Planning**
 - A. Purpose**
 - B. Values and Beliefs**
 - C. Visions**
 - D. Vision Themes**
 - E. Actions**
 - F. Policy**
- 3. Questions and Answers**

1. Timelines

Members of the Institutional Waste Stakeholders Group and DNR Solid Waste Management Program staff participated in a Timeline exercise at the start of the work session. In this exercise, everyone was asked to jot down significant events on a series of timelines. The three timelines were labeled Personal, National and Solid Waste Management. This exercise helped the group get to know each other, warm-up for the tasks to come and gain some perspective on the relationships of these three areas of their lives. The results of this exercise are found in Attachment 2.

2. Action Planning

A. Purpose

IWSG members were asked to draft a *Purpose Statement* expressing the reason(s) for developing an institutional solid waste management plan. The statement should help guide the development of plan components.

The *Purpose Statement* developed by the IWSG:

The purpose of an institutional solid waste management plan is to provide guidance to institutional policy makers for solid waste management initiatives that, when implemented, will result in sustainable efficiencies in resources, economics, ecology and the environment.

B. Values and Beliefs

Following development of the purpose statement, IWSG members were asked to express their *Values and Beliefs* regarding management of institutional solid waste. The values and beliefs put forth should reflect the principles and guiding factors that undergird people's decisions and actions. This step helped each member think about the foundation for their own decision making, as well as that of the larger group or society as a whole. Developing the purpose, values and beliefs as a group helped the stakeholders build a common ground of understanding and a realization that "we are all in this together."

The values and beliefs expressed by members of the IWSG were these:

- Provide our children an opportunity to have what we have or better.
- Informed citizens will make better solid waste management decisions.
- Quality solid waste management needs to be cost efficient.
- The solid waste plan should be long term.
- The plan needs to capture a diversity of orientations to solid waste management.
- There should be respect for our fellow human beings.
- Quality solid waste management by institutions is socially responsible.
- Successful program needs broad support.
- Environmental and economic life cycle should be considered whenever feasible.
- The solid waste management plan needs to accommodate a variety of institutional missions.
- Institutions should do better.
- Resources are limited.
- The solid waste management plan should be understandable, provide for institutional accountability and sense of ownership.
- Respect for the overall environment.
- Apply a systemic change in thinking that takes into account the evolving character of institutions.

C. Visions

Vision tells us where we are going; it is our overall sense of direction, the destination. The IWSG was asked to imagine the type of institutional waste management system that would be in place in the year 2026, assuming that the best institutional waste plan had been developed and implemented between now and then. The end product of this activity is a series of vision statements. Ultimately, the Vision process is fruitful when it leads to development of specific actions that will enable the Vision to be realized.

At a later point in the process, the group was asked to prioritize the vision statements. Each member was given two dots of each color to indicate statements they supported, or those that they personally felt should be eliminated. By limiting the number of dots each participant could use, this process forces the individual to choose which statements they feel are most important. Since vision statements may be made that are not supported by others in the group, this process provides a means to express their opposition. The complete list of vision statements follow, including the dots they received (note: some statements did not receive any dots).

Vision 2026

Green Dot = most important	Yellow Dot = important	Red Dot = support, but not as important as Green, or Yellow	Blue Dot = eliminate
-----------------------------------	-------------------------------	--------------------------------------------------------------------	-----------------------------

	Green	Yellow	Red	Blue
Next IWSG meeting in Springfield				•
Same or greater degree of biodiversity in the environment				
Clean air and water		•••	•	
Commercially viable mining of all landfills in Missouri			•	•
Greater profit when less waste is landfilled and when more material is recycled	•	•••••	••	
No trash cans in offices				•
Complementarity between waste generators and users of waste		•	•••••	
Laidlaw truck on display at museum				
50% increase in waste to energy facilities				••••
Recycling containers are larger than dumpsters				•
Federalize all trash haulers				••••• ••••• ••••• ••••• •••••
Aquatic systems support a wide variety of life				
Natural disposal			•	
Integrated into education system	••••• ••••	••••• •	••••	
47.2% increase in green space		•	•	
Cost of products include recycling costs	•	••	••	
Responsible purchasing practices	••	••	••	
Green procurement is routine and drives product manufacturer responsibility	••••• •••	•••	••••• •	
80% of all vehicles use alternative fuel	•	••	•••	
80% reduction in paper usage	•••	•		
Zero waste	••	•	•	•
Government mandates regarding solid waste management are no longer necessary			••••	••
Composting facilities tailor-made to institutional needs		•		
Ongoing sustainability is a reality in an optimistic public	•	•	••	
Institutions are providing leadership in solid waste management	••••	••••• ••	••	
Number of landfills reduced by 50%				
Government sponsored recycling program paid for by tipping fees	•••			•
Happy solid waste management personnel and public at large				
Biodegradable packaging is a way of life	•••••	•	•••	

D, E and F. Visions, Actions and Policies Organized by Themes

Vision Themes, or clusters, are groupings of visions with some thread of commonality. The IWSG came up with five themes under which the majority of vision statements would naturally fall. These were:

1. **Reduced Waste Stream**
2. **Role of Government**
3. **Economics and Procurement**
4. **Education – Public Awareness – Lifestyle**
5. **Green Planning**
6. **Environment**

The vision themes could then become the connection to action. In a sense, vision themes can be viewed as action areas. *Actions* are the things that need to be done to move from the present toward one or more of the visions in a vision theme. In solid waste management, many of the needed actions in turn indicate a need for a change in policy or adoption of new policies. For this reason, policies are listed separately from other types of actions.

Group members chose one theme to work with, forming four smaller groups (no interest was shown to work on the Green Planning and Environment themes). Each of the four groups developed a list of actions under their chosen theme. Following this step, each of the four groups wrote policy statements they felt were necessary to implement the most important action in their list: one for state government and one for institutions. At this point, all group members were given the colored dots described above to indicate support or opposition to vision statements or proposed actions. This document lists the vision statements as they were grouped under the four themes, followed by the actions and policies that were proposed.

Theme 1. Reduce Waste Stream

A. *Visions, year 2026*

	Green	Yellow	Red	Blue
Commercially viable mining of all landfills in Missouri (1 red, 1 blue)			●	●
No trash cans in offices (1 blue)				●
50% increase in waste to energy facilities (4 blue)				●●●●
Recycling containers are larger than dumpsters (1 blue)				●
Responsible purchasing practices (2 green, 2 yellow, 2 red)	●●	●●	●●	
Green procurement is routine and drives product manufacturer responsibility (8 green, 3 yellow, 6 red)	●●●●● ●●●	●●●	●●●●● ●	
80% reduction in paper usage (3 green, 1 yellow)	●●●	●		
Zero waste (2 green, 1 yellow, 1 red, 1 blue)	●●	●	●	●
Composting facilities tailor-made to institutional needs (1 yellow)		●		
Number of landfills reduced by 50% (no dots)				

B. Actions

	Green	Yellow	Red	Blue
No trash cans in offices				●●●●
Adopt Canadian model for janitorial contract: custodians pick up recyclables at each desk, employees take trash to central station			●●●	
Cut back on paper usage – i.e., copies		●	●	
Culture change through education	●●●●● ●●●●●	●●		
Legislative support	●●			
Make recycling profitable	●●●●			
Market development – reduce cost of recovery	●	●	●●	
Technological advancements are needed	●	●●●●● ●	●	
Product and packaging stewardship	●●●	●●	●	
State and local government supported waste reduction programs	●	●●●●	●●●●●	

C. Policies

For State Government: All institutions must have a waste reduction plan in place by XX/XX/XX.

For Institutions: A solid waste reduction program shall be developed and implemented in accordance with the statewide plan.

Theme 2. Role of Government

A. Visions, year 2026

	Green	Yellow	Red	Blue
Clean air and water		●●●	●	
Greater profit when less waste is landfilled and when more material is recycled	●	●●●●●	●●	
Federalize all trash haulers				●●●●● ●●●●● ●●●●● ●●●●● ●●●●●
Aquatic systems support a wide variety of life				
Integrated into education system	●●●●● ●●●●		●●●●	
Government mandates regarding solid waste management are no longer necessary			●●●●	●●
Institutions are providing leadership in solid waste management	●●●●	●●●●● ●●	●●	
Government sponsored recycling program paid for by tipping fees	●●●			●

B. Actions

	Green	Yellow	Red	Blue
Provide goals (not mandates) for the private sector and set example		●●		
Increase education from kindergarten through college	●●●●● ●●●●●	●●●●	●●	
Education for the general public		●●●●	●	
Pass laws, develop rules and get appropriations			●	●●●●● ●●●●
Provide additional federal, state, local and private sector support for research	●	●●		
Enforce existing laws and increase inspections	●●	●●●	●●●●	
Provide for financial support		●	●	
Government needs to show need for change to get public support	●			●

added by other group member:
Institutional leadership: provide awards (recognition) to institutions that have exemplary programs (& financial rewards)

C. Policies

For State Government: Develop standardized curriculum and statewide guidelines for evaluation

For Institutions: Their policy will be to provide support and/or implement curriculum

Theme 3. Economics and Procurement

A. Visions, year 2026

	Green	Yellow	Red	Blue
Commercially viable mining of all landfills in Missouri			●	●
Greater profit when less waste is landfilled and when more material is recycled	●	●●●●●	●●	
Complementarity between waste generators and users of waste		●	●●●●●	
Cost of products include recycling costs	●	●●	●●	
Responsible purchasing practices	●●	●●	●●	
Green procurement is routine and drives product manufacturer responsibility	●●●●● ●●●	●●●	●●●●● ●	
Government mandates regarding solid waste management are no longer necessary			●●●●	●●
Government sponsored recycling program paid for by tipping fees	●●●			●

B. Actions

	Green	Yellow	Red	Blue
Mandate recycling costs into product pricing. Manufacturers purchase expired products.	●●			●●●●● ●●●●● ●●●●●
Improve technology for more economical means to manufacture recyclable products	●●●●	●●		
Educate administration and users			●	
Mandatory recycled content in products		●●●	●	●
Institutional policy-makers mandate green procurement				
Develop model contracts for solid waste management services that provide financial incentives for reduction and recycling	●			
Develop financial incentives for closed-loop markets	●●	●●●●	●●●●● ●●	
Increase partnerships between educational, social service and recycling communities	●	●●	●	
Changes in marketing focus/packaging	●●	●	●●●	

C. Policies

For State Government:

Economics – State grants provide higher priority to projects that promote partnerships between educational, social service and solid waste organizations.

Procurement - State develops model procurement policies and contracts for institutions to use to support closed loop markets.

For Institutions:

Economics – Institutions adopt policies that enable partnerships between educational, social service, and solid waste organizations.

Procurement - Institutions adopt procurement policies to encourage closed-loop markets.

Theme 4. Education - Public Awareness – Lifestyle

A. Visions, year 2026

	Green	Yellow	Red	Blue
Laidlaw truck on display at museum				
Recycling containers are larger than dumpsters				●
Integrated into education system	●●●●● ●●●●	●●●●● ●	●●●●	

Green procurement is routine and drives product manufacturer responsibility	●●●●● ●●●	●●●	●●●●● ●	
Government mandates regarding solid waste management are no longer necessary			●●●●	●●
Happy solid waste management personnel and public at large				
80% reduction in paper usage	●●●	●		
Institutions are providing leadership in solid waste management	●●●●	●●●●● ●●	●●	

B. Actions

	Green	Yellow	Red	Blue
Missouri Assessment Program – [includes] component covering resource management		●●	●	
Waste management added to teacher education programs	●			
Department of Natural Resources' funds resource management education and supports with infrastructure (i.e. equipment, facilities, supplies, personnel)	●●●●●			
Graduates of 4 year, community college, technical school or any post secondary school, [required to take] one environmental education course.	●		●	
Education of institutional leaders (i.e. CEOs, CFOs) of environmental principals and economics of resource management		●●●●	●●●	
Adult education	●			
Legislation				●●●●● ●●●●● ●●●●●
Waste management vs. Resource management – change reference to the positive			●●●	
Public ad campaigns			●●●	
Resource management tied to health and safety		●●●		●
Public endorsement by local, state, county govts.		●	●●	
Mechanism for sharing good practices		●	●	
Awards / recognition of excellence in resource management		●●●	●	
Pay by the unit for waste generated				

added by other group members:
MDNR and Dept. of Elementary and Secondary Education establish memorandum of agreement on solid waste education
MDNR and Dept. of Higher Education develop memorandum of agreement on solid waste education

C. Policies

For State Government: Department of Natural Resources' funds resource management education and supports with infrastructure (i.e. equipment, facilities, supplies, personnel)

For Institutions: Education of Institutional leaders (i.e. CEOs, CFOs) of environmental principals and economics of resource management

What is Missing?

IWSG members were asked to review the plan input and list important concepts or actions that they feel are missing:

- Goals and targets
- Where is funding coming from?
- Public education in policy statements
- Waste identification
- Waste audits are needed.
- Comprehensive plan is needed.
- Focused only on institutions, not general public. Plan is doable and cost is borne by institutions and price of goods increases and is passed on to consumer.
- Appropriate legislation.
- What is already “out there” and how it can impact plan implementation.
- Data collection—mechanisms; holes in current process?
- Additional ideas—Resource Management vs. Waste Management
- How? Implementation. Transition.
- Understanding waste streams of institutions.
- Role of government is unclear. Leadership? Communications? Mandates?
- Annual reporting on progress—quantifiable results (i.e., deadlines).
- Development of standardized education through the Department of Education. MDNR should provide expert guidance to educators.

3. Question and Answer Session

At the end of the workshop, the members of the IWSG were asked questions by the department's staff. This question and answer session allowed staff to get clarification on Vision, Action or Policy statements or to address issues that did not arise during the workshop. IWSG members were encouraged to discuss and summarize their answers, which were recorded on flip charts for their review.

1. Under the “Reduced Waste” theme, legislative support/action is listed; an example?
Place waste management hierarchy into statute (places reduction first, followed by reuse, recycling and composting, with disposal as the least desirable approach). Use state plan development process to develop recommendations for legislation, more specifically as the building blocks for potential legislation.

2. How do you feel that developing recycling markets reduces cost of recycling?
Better markets to recover costs, market development through better marketing of equipment to reduce costs.
3. What is meant by state and local government supported waste reduction and recycling programs?
Local government needs to buy into and spend money/resources on waste reduction and treat as a service or utility, not an amenity.
4. The state should come up with an institutional solid waste plan for all institutions. How should this happen? What legislation would be needed?
State would mandate that institutions have a waste reduction plan by a certain date. State would provide technical assistance and models. A communication network would be created to provide information to institutions. If you have a goal, at a minimum, make the achievement or non-achievement meaningful. Positive reinforcement for achieving goals.
5. Any more comments on legislation?
Use data the state has to create models.
6. Who is responsible for developing a solid waste curriculum?
Create partnerships among state agencies to coordinate education efforts. Create structures to implement partnerships between education agencies and state agencies to achieve natural resources conservation goals.
7. Should we educate administration and users?
Yes.
8. Can you expand on how partnerships improve economics?
(there was a discussion, but no answer was documented)
9. How should DNR fund the proposed educational activities and recycling equipment and supplies, with existing funds or a new revenue source?
Target educational activities in the project grants (state waste reduction and recycling grants, funded by the Solid Waste Management Fund). Include education activities for CEO/CFOs and workers.
10. What do you envision as endorsement by city, county, state governments?
A concentrated effort by elected or appointed city officials to support reduction and recycling and inform public of their support.
11. Why no further discussion of the “Green Planning” or “Environment” themes?
Feel that they are enveloped into the other four themes.

12. In the list of Visions, why not be more specific, such as examples of how waste would be managed in one type of institution, e.g. prisons?

Prisons should compost their waste. Share best practices within each institution type through statewide focus groups.

13. What about reuse?

Feel that the visions and actions stated include reuse as well as recycling.

Appendix 1

Institutional Waste Stakeholder Group

The following individuals participated in the October 10-11, 2001, work session to provide input for the Missouri Solid Waste Management Plan on managing solid waste from institutions.

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TIMELINES

Members of the Institutional Waste Stakeholders Group and DNR Solid Waste Management Program staff participated in a Timeline exercise at the start of the work session. In this exercise, everyone was asked to jot down significant events on a series of timelines. The three timelines were labeled Personal, National and Solid Waste Management. This exercise helped the group get to know each other, warm-up for the tasks to come and gain some perspective on the relationships of these three areas of their lives.

TIMELINE HEADING	1930's	1940's	1950's	1960's	1970's	1980's	1990's – Now
PERSONAL	Dad's stories Grandparents' stories Parents born I was born!	Born Origin of "Planned Obsolescence" Grandparent's farm Start of baby boom 1 st birthday War time Paper drives Birthday Father in WWII Awareness of world affairs	Drive-in movies Rock & Roll Tornadoes Easy life DOB '54 Chevy Working on farm Started school Bee-Bop Born Moved to farm DOB Working on farm Working on farm	High school College, marriage, kids '57 Chevy Convertible Brother in Vietnam Father in Vietnam Rock & roll Army, Vietnam, Africa High school No Vietnam protests Vietnam protest 1 st car Lived in South America College & graduate school Draft Trained as scuba diver (Navy) '67 Chevelle SS Card parties with grandparents TV dinners Ms. Sims environmental class	Married Family time Married Married No drive-in movies City manager Race relations Graduation High school graduation 1 st child US Navy Army Vietnam 1 st pay checks Started this job Son born College Summers at the beach	Came to America Career change & divorce US Citizenship Kids born Daughter born "Free love" Gone too quick Began working in Solid Waste Married & kids Started a business Children born Work Work VCP 1 st child Raised the "Mary Rose" Work Marriage Disco Daughter born Moved Start of environmental career	Current job Current job EPA Solid Waste Cruise Grandchildren Started a business 1 st Grandchild Moved to Missouri Graduated from college Empty household Working & Fishing Concerned times Job change Married/divorced Still alive Son born Went on safari with brother & sister Career change Served in Gulf War More work Children Retirement Divorced Importance of peace Retirement 1 wife, 4 kids, quit smoking

TIMELINE HEADING	1930's	1940's	1950's	1960's	1970's	1980's	1990's – Now
NATIONAL	Depression WPA Social Security Dust Bowl Poor medical care Waste not – want not CCC Threshing crews Dr. William Beebe finds fish-deep underwater	WWII Atomic energy Rationing War efforts Economic boom Truman rocks Suburbs start	Rock & Roll Silent Spring- Rachel Carson Highways Suburbia and the car Growing economy Television Korean war Baby boom Polio vaccine	ML King assassination Riots Antiwar protest Drugs Kennedy assassinations Space program Beatles Vietnam Moon landing Awareness of pesticides dangers Hippies do your own thing Travel	Environmental movement starts Earth Day-EPA Man on moon Nixon End of Vietnam Iran hostages World economic 3 Mile Island	Business as usual Music went bad Disco yetch Yuppies Concern with hazardous waste Reaganomics Challenger explosion Oli North Good life Titanic found	September 11 SUVs Cell phones Gulf war Stock market rise & fall ATMs Health issues Peace breaks out Urban sprawl-awareness What are we doing to our environment? Computers and the Internet MO Stream Team Program began Euro money system Privatize everything
SOLID WASTE MANAGEMENT	Reduce, reuse, recycle was the norm Rag collectors Bulk products Ditches-dumping on undesirable land Local landfills	Feed trash to hogs -cause vesicular anathema Disposable = fashionable, affordable, convenient Massive war output Lots of room – no concern Metal drives	Television advertising Throw-away goods Open dumps Recycle glass bottles rebate Bottle deposits No need to save	Silent Spring People start using the word ecology My 91 year old grandmother introduced me to composting Disposing of televisions TV dinners Too much stuff -what are we willing to change The free waste society	Closed dumps Started landfills 1 st Earth Day Super Fund – Times Beach Columbia deposit law Mercury in Fish River Concern – pollution, noise, as well as products	Early large recycle efforts start Recycling program began Fast food Tipping fees to fund grants/recycling and waste reduction Garbage barge Fresh Kills landfill Infectious waste rules Chernobyl Mobro barge leaves New York MO SW Study Starting to worry about more people, more waste	Personal computers SB 530, Recycling and the economy Responsible for recycle program Waste reduction 1 st Conservation office began D.O.C. tire recycling Sub Title D Began to empower students Focus on sustainability America/Mo. Recycles Day Solid waste districts Waste impacts on climate change Buy recycled Hopefully willing to make changes Bio-reactor landfills State plan process begins Stan moves from SWCP to SWMP Resource efficiency Tire fee/waste tire issues Target grants

APPENDIX F

STAKEHOLDER GROUP INPUT

3. Construction and Demolition Waste Stakeholder Group

Construction and Demolition Waste Stakeholder Group Draft Plan Input

On April 17-18, 2002, members of the Construction and Demolition Waste Stakeholder Group (C&DWSG) participated in a two day work session. The purpose of this work session was to bring together individuals with diverse viewpoints and experiences regarding construction and demolition solid waste management so that, through a facilitated process, they would provide input for the Missouri Solid Waste Management Plan. The session facilitators were Mr. Jerry Wade and Mr. John Tharp, with University of Missouri Extension and Outreach. Staff from the Missouri Department of Natural Resources' Solid Waste Management Program attended, mainly as observers and to manage meeting logistics.

Agenda

The general agenda for the work session was posted:

- 1. Timelines**
- 2. Action Planning**
 - A. Purpose**
 - B. Values and Beliefs**
 - C. Visions**
 - D. Vision Themes**
 - E. Actions**
 - F. Policy**
- 3. Questions and Answers**

1. Timelines

Members of the C&DWSG and the department's Solid Waste Management Program staff participated in a Timeline exercise at the start of the work session. In this exercise, everyone was asked to jot down significant events on a series of timelines. The three timelines were labeled Personal, National and Solid Waste Management. The C&DWSG members were asked to review the timelines and list the dominant themes in each. This exercise helped the group get to know each other, warm-up for the tasks to come and gain some perspective on the relationships of these three areas of their lives. The results of this exercise are found in Attachment 2.

2. Action Planning

A. Purpose

C&DWSG members were asked to draft a *Purpose Statement* expressing the reason(s) for developing a Construction and Demolition solid waste management plan. The statement should help guide the development of plan components.

The *Purpose Statement* developed by the C&DWSG:

The purpose of a Construction and Demolition solid waste management plan is to provide for a quality environmental future meeting minimum health, safety and aesthetic standards in a fair, equitable and economical manner.

B. Values and Beliefs

Following development of the purpose statement, C&DWSG members were asked to express their *Values and Beliefs* regarding management of construction and demolition solid waste. The values and beliefs put forth should reflect the principles and guiding factors that undergird people's decisions and actions.

This step helped each member think about the foundation for their own decision making, as well as that of the larger group or society as a whole. Developing the purpose, values and beliefs as a group helped the stakeholders build a common ground of understanding and a realization that "we are all in this together."

The values and beliefs expressed by members of the C&DWSG were these:

- Compliance achieved via incentives is preferable to compliance achieved via regulation
- People have a right to a healthy environment
- A c&d solid waste management plan for Missouri should be economically feasible for communities
- Waste reduction is good
- Every effort should be made to get broad participation and buy-in by the industry
- A cornerstone for handling c&d materials should remain the waste management hierarchy – reduce, reuse, recycle
- C&d waste is an important environmental issue
- The plan should be practical
- The plan should include education on how to protect the environment
- The plan should be enforceable

C. Visions

Vision tells us where we are going; it is our overall sense of direction, the destination. The C&DWSG was asked to imagine the type of construction and demolition waste management system that would be in place in the year 2027, assuming that the best construction and demolition waste plan had been developed and implemented between now and then. The end product of this activity is a series of vision statements. Ultimately, the Vision process is fruitful when it leads to development of specific actions that will enable the visions to be realized.

The complete list of vision statements follow:

Visions for the year 2027

Every community has a plan and is responsible for elimination of its own waste
Widespread use of plasma arch technology and material recovery to reduce landfill airspace usage
Industry is using recyclable material in its processing and packaging
Clean highways and county roads
All lakes and streams are clean
Recycling is a highly profitable business
Incinerators use the heat generated to produce electricity
The built environment has reverted to the soaring grandeur of classical architecture
New buildings are smart, artistic, & green, connected by mass transit.
Old buildings are preserved where possible.
If not preserved, old buildings are deconstructed and unusable materials are recycled or composted.
Old lands are re-developed and new lands are developed w/ ecosystem and social environment as prime goals
Regulation and enforcement are obsolete
All c&d waste is reused or recycled
Landfills are mined profitably for their resources
Everyone recycles as a routine
All dump sites are cleaned up
There are flowers along all highways
Population growth has occurred over the current development footprint (urban renewal)
Environmentally safe incinerators are destroying a large percentage of remaining waste
Sustainable buildings are built that reduce or eliminate c&d waste
Entire communities built largely with reused and recycled materials
Many more homes and buildings built without irreparable harm to the environment
A healthy and prosperous environment

D, E and F. Visions, Actions and Policies Organized by Themes

Vision Themes, or clusters, are groupings of visions with some thread of commonality. Some vision statements can be linked to more than one theme. The C&DWSG came up with five themes under which the majority of vision statements would naturally fall. These were:

1. **Environmental / Aesthetics**
2. **Economics / Sustainability**
3. **The 3 R's – Reduce, Reuse, Recycle**
4. **Landfill Management**
5. **Technology**

The vision themes could then become the connection to action. In a sense, vision themes can be viewed as action areas. *Actions* are the things that need to be done to move from the present toward one or more of the visions in a vision theme. In solid waste management, many of the needed actions in turn indicate a need for a change in policy or adoption of new *Policies*. For this reason, policies are listed separately from other types of actions.

Group members chose one theme to work with, forming five smaller groups. Each of the five groups developed a list of actions under their chosen theme. Following this step, the groups wrote policy statements they felt were necessary to implement the most important actions in their list.

At this point, the group was asked to prioritize the action statements. Each member was given dots of each color listed below to indicate action statements they supported, or those that they personally felt should be eliminated. By limiting the number of dots each participant could use, this process forces the individual to choose which action statements they feel are most important. The following section of this document lists the vision statements which each group felt were strongly associated with the theme, followed by the actions and policies that were proposed.

Green Dot = most important	Yellow Dot = important	Red Dot = support, but not as important as Green, or Yellow	Blue Dot = eliminate
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Theme 1. Environmental / Aesthetics

D. *Visions for the year 2027 associated with this theme*

Clean highways and county roads
All lakes and streams are clean
Environmentally safe incinerators are destroying a large percentage of remaining waste
There are flowers along all highways
A healthy and prosperous environment
The built environment has reverted to the soaring grandeur of classical architecture
All dump sites are cleaned up
Everyone recycles as a routine

E. Actions

	Green	Yellow	Red	Blue
Education	••••			
Enforce and enhance littering laws			•••	
Develop horizontal air barrier technology to keep warm air near the floor in high ceilinged indoor spaces				
Expand the Adopt-a-Highway program				
Incentive to promote recycling and use		•	•	
Convenient recycling opportunities			•	
Each county make illegal dump site cleanup routine				
Organize committees for environmental cleanup				
SWMP form a partnership with all counties to develop recycling program.				
Develop inexpensive alternative building materials with aesthetic performance equal to traditional building materials				
Develop physical incentives for preserving and restoring old buildings (residential, institutional and commercial)				

added by other group members:				
Promote eco-industrial parks to take advantage of waste and product streams and reduce hauling charges.				

F. Policies

- To educate our school children in the definition of solid waste, how to manage it, and the importance of solid waste cleanup to have a healthy environment.

Theme 2. Economics / Sustainability

D. Visions for the year 2027 associated with this theme

Recycling is a highly profitable business
Regulation and enforcement are obsolete
Industry is using recycled/recyclable material in its processing and packaging.
New buildings are smart, artistic, & green, connected by mass transit.
Old buildings are preserved where possible; if not preserved, old buildings are deconstructed and unusable materials are recycled or composted.
Old lands are re-developed and new lands are developed with ecosystem and social enrichment as prime goals.
Landfills are mined profitably for their resources.
Sustainable buildings are built that reduce or eliminate c&d waste.
Many more homes and buildings built without irreparable harm to the environment.

Theme 2. Economics / Sustainability (continued)

E. Actions

	Green	Yellow	Red	Blue
Provide incentives/regulations for: - historic preservation - building deconstruction and bulk material recycling - design and construction by LEED standards (LEED stands for Leadership in Energy and Environmental Design. The LEED Green Building Rating System is a voluntary program of the US Green Building Council.) - market development and publicity	•	••	• ••	
Tax on consumption vs. current system of state income tax and property tax.	•			
Feasibility/economic impact study	••			
Long term strategic plan with transitional phases				
Implement comprehensive system of targeted tax incentives for recycling research and development and compliance		•	•	
Incentives for 3 R's (reduce, reuse, recycle)		•••••		
Education			••	
Sustainable approach utilizing technology to deal with what is currently considered waste.			•	

added by other group members:
Environmental impact study prior to development

F. Policies

For State Government:

- Comprehensive, long term strategic plan (environmental, economic)
- Information summary for all building construction to highlight available incentives on environmental building technologies/efficiency
- New tax incentives for construction and demolition waste removal and reuse that is environment-friendly

For Local Government:

- New tax incentives for construction and demolition waste removal and reuse that is environment-friendly

Theme 3. The 3 R's – Reduce, Reuse, Recycle

D. Visions for the year 2027 associated with this theme

Recycling is a highly profitable business
Every community has a plan and is responsible for elimination of its own waste
Incinerators use the heat generated to produce electricity
Industry is using recyclable material in its processing and packaging
All c&d waste is reused or recycled
Landfills are mined profitably for their resources
Sustainable buildings are built that reduce or eliminate c&d waste
Entire communities built largely with reused and recycled materials
Everyone recycles as a routine
Old buildings are deconstructed and unusable materials are recycled or composted.

E. Actions

	Green	Yellow	Red	Blue
Education of public on recycling – - logo contest - motto/slogan that can be remembered and readily repeated	••••	•	•••	
Financial incentives – - grants - tax credits - direct payments	•• •	•• •• •••		
Public/Private partnerships – - ongoing technical support - direct hands-on - fund stakeholder training		•	•••	
Research and development of new materials				

added by other group members:				
Don't forget mandatory regulations				••••• ••••• ••••• •

F. Policies

- Financial incentives on federal, state and local levels
 - fair distribution of funds
 - ensure that smaller communities have equitable access to funds
- Fund stakeholders in order to provide technical/mentoring input in support of educational efforts at the local level.

Theme 4. Landfill Management

D. Visions for the year 2027 associated with this theme

Every community has a plan and is responsible for elimination of its own waste
Industry is using recyclable material in its processing and packaging
Landfills are mined profitably for their resources
Entire communities built largely with reused and recycled materials
A healthy and prosperous environment
All dump sites are cleaned up

E. Actions

	Green	Yellow	Red	Blue
Tax incentives/benefits for recycling companies, haulers, builders, products		•		
All landfills required to have material recovery program (with permit)				
Funding – research for new recycling and recovery – long term plan			••	
Education – waste recovery, RRR – required (Make landfill a good/positive concept)	•••			
Funding risky new ventures				
Participation in rule development and policies				
Global thinking – i.e. site cleanup, NIMBY – out of sight				
Comprehensive waste destination list				
Use regulation as a means to develop RRR				

F. Policies

For State Government:

- Special conditions and permits for recovery of material, site specific conditions
- Require education
 - general publications
 - training/seminars regulatory
 - policy to commit to education as part of all grant awards
 - increase public awareness of information sources, i.e. web pages, hotline, toll free number, public announcements
- Offer more funds for grants for research and development
- Offer more funds for grants for venture business
- Policy on tax incentives for using and creating recycled goods
- Eliminate tax incentives for virgin materials

Theme 4. Landfill Management *(continued)*

F. Policies *(continued)*

For Local Government:

- Local enforcement of state policies agreed upon at state/local levels
- Increase local awareness of available recovery sites
- Offer easy access to c&d material recovery facility
- Incentives to create material recovery facilities (state/local issue)
- Local recycling laws encourage reduced waste, i.e. pay-as-you-throw collection fees
- Incentives to source separate on c&d site or at landfill

Theme 5. Technology

D. Visions for the year 2027 *associated with this theme*

Widespread use of plasma arch technology and material recovery to reduce landfill airspace usage
Incinerators use the heat generated to produce electricity
Industry is using recyclable material in its processing and packaging

E. Actions

	Green	Yellow	Red	Blue
Public education about new technology				
Incentives for industry to develop technology	•		•	

added by other group members:				
Move beyond research and development to applications			•	
Develop horizontal air barrier technology to keep warm air near the floor in high ceilinged indoor spaces	•			
Comprehensive research and development into improved efficiency, lower cost of mining landfills and reuse and deconstruction practices.		•	•	
Continue developing inexpensive alternative building materials with aesthetic performance equal to traditional building materials.				

F. Policies

For State/Federal Government:

- All new products developed must include a plan for reuse or disposal in an environmentally safe manner.
- Priority incentives will go to products that meet above criteria.

What is Missing?

C&DWSG members were asked to review the plan input and list important concepts or actions that they feel are missing:

- Bigger and better financial incentives to fund new recycling and to reward those already doing it right
- Plan must be economically viable
- Take actions to encourage purchase of recycled materials
- Tax incentives should move from virgin materials to recycled materials
- Action steps into education – community based marketing – collect data to see where people are at
- Make it as easy as possible for people to take desired action
- Educating children regarding solid waste management which will get adults (parents) more involved

3. Question and Answer Session

At the end of the workshop, the members of the C&DWSG were asked questions by the department's staff. This question and answer session allowed staff to get clarification on Vision, Action or Policy statements or to address issues that did not arise during the workshop. The notes taken by department staff follow:

1. One of the proposed actions under the Landfill Management theme calls for "Participation in rule development and policies." What type of participation would you like to see?

Participation and input from stakeholders and/or landfill owners

2. What is meant by the "Global thinking – i.e. site cleanup, NIMBY – out of sight" listed under the Landfill Management theme? (NIMBY stands for not-in-my-backyard, a common description of peoples attitudes that they want some place to take their trash, but don't want it located near them)

It is important for people to understand that landfills are a positive necessity and that they fit into an integrated waste management system.

3. Can you tell us more about the type of educational efforts indicated under the Landfill Management theme?

Besides the basic principles of "reduce, reuse, recycle" consumers should be educated to buy products made from 100% recycled materials in order to create markets for recyclables. They need to better understand the economics of recycling.

4. Elaborate on the "Tax on consumption" proposed under the Economics / Sustainability theme. Much of the solid waste generated is packaging, disposable products, and other products which are disposed of relatively quickly. Having a tax on consumption, as opposed to the current system of state income tax and property taxes, would place more of the tax burden on those who purchase more products.

5. Under the Environment / Aesthetics theme, there is a proposal for the plan to form a partnership with all counties to develop recycling program. Why do you see this as important?

This proposal was added because it is very important to involve the counties in creating local programs. The county can more easily work with local governments and other entities. One suggestion for local programs would be to expand the adopt-a-highway program to other environmental areas.

6. Under the Economics / Sustainability theme, a policy for a comprehensive, long term strategic plan (environmental, economic) is proposed. How can both environmental and economic aspects be addressed?

One way is to partner recycling incentives with economic development incentives. For example, when businesses are assisted by the Department of Economic Development, they could be required to include a plan for recycling in their business plan.

7. Several of the proposed actions or policies would involve financial incentives. Do you have any recommendations for funding these?

In some cases the incentive might be a tax exemption or other mechanisms for reducing costs which do not require the state to spend money. For those incentives which would require funding above the current tonnage fee that goes to the Solid Waste Management Fund, the group did not have any specific recommendations.

During the work session, a discussion took place which was not a part of the agenda, but which is important to include in this document. Staff from the Solid Waste Management Program proposed that a state wide building code be adopted. This was thought to be a way to increase the life span of buildings through quality standards, theoretically reducing the amount of waste generated through demolition. If the building is properly designed and constructed, it should last longer. This building code may also provide specifications for using alternative building materials which conserve resources or contain recycled content.

Several work group members expressed their concerns with the concept of a state wide building code. They pointed out that in practical terms, this could cause a great deal of added time and expense to the construction process. Where local building codes are in place, there are many steps throughout the process which require approval and/or inspection from the department of code enforcement. If implemented from a state office in the capitol, the builder would need to travel to Jefferson City every time an approval is required. The cost to provide state employees to implement the codes from each county and many cities would be enormous.

The group members suggested this approach: "Local municipalities should be given the authority to adopt their own building codes, with financial incentives to use alternative materials."

Appendix 1

Construction and Demolition Waste Stakeholder Group

The following individuals participated in the April 17-18, 2002, work session to provide input for the Missouri Solid Waste Management Plan on managing solid waste from institutions.

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TIMELINES

Members of the Construction and Demolition Waste Stakeholders Group and DNR Solid Waste Management Program staff participated in a Timeline exercise at the start of the work session. In this exercise, everyone was asked to jot down significant events on a series of timelines. The three timelines were labeled Personal, National and Solid Waste Management. The C&DWSG members were asked to review the timelines and list the dominant themes in each. This exercise helped the group get to know each other, warm-up for the tasks to come and gain some perspective on the relationships of these three areas of their lives.

TIMELINE HEADING	1930's	1940's	1950's	1960's	1970's	1980's	1990's – Now
PERSONAL	My house was built, no building codes	Mom went to war Birth	Birth Grew up in Alaska Birth '51 Flood '59 Tornado Birth Birth	High schools - moved around the country Birth Birth High school & College High school Family party in back yard burning trash My mom "The Original Recycler" made us wash alum. foil for reuse USAF	US Citizenship College-marriage Marriage Birth Graduated H.S. US Army Married College Marriage High school College /marriage /children Marriage /college /Houston /graduation Me	Start private business Back to the workforce College College Children Education Purchased 1 st home Had child Family College	Grandchildren Flood Children grown – left nest College/Marriage Children Start business Started working at DNR Interest in solid waste Change careers Became involved in C&D waste reuse Career change to trash (of all things) Cancer survivor Graduate RN School and BAS Human Service Marriage /carriage

Themes in the Personal Timeline:

- Birth
- Education
- Careers
- Marriage – family
- Home purchase
- Weather disasters
- Foreign invasion
- Grandchildren
- Survival

TIMELINE HEADING	1930's	1940's	1950's	1960's	1970's	1980's	1990's – Now
NATIONAL	Depression starts New deal-work programs FDR	W.W.II A-Bomb Harry Truman (Mo) Women worked Berlin Wall up	Baby Boomers Korean War McCarthyism Highways go national Elvis! (some) Women back at home T.V.	JFK assassinated Vietnam Charles Manson murders Women return to the workforce The Beatles Civil rights Malcom X, Martin Luther King, Robert Kennedy assassinated Bay of Pigs- nuclear threats Hippies Weed Moon walk	Watergate Vietnam/Anti-War protests ERA Gasoline crisis Roe v Wade 1 st Earth Day Elvis dies (maybe) Consciousness expanded Disco Family farms endangered	Gulf war Ronald Reagan Corporate takeovers Computer revolution Digital Berlin Wall goes down Exxon Valdez	Terrorism Y2K Internet Clinton presidency- Redefinition of “is” Cell phones

Themes in the National Timeline:

- More familiarity with events of the 60's and 70's
- Growth in government
- Issues come in cycles (repetitive)
- Wars (constant)
- Continuous (multi-decade) events
- Job cycles rotate
- Progressive technology (innovation)
- Increasing concern with resource shortage
- Business growth
- Population growth
- Prolonged economic expansion

TIMELINE HEADING	1930's	1940's	1950's	1960's	1970's	1980's	1990's – Now
SOLID WASTE MANAGEMENT		War effort - recycling Development of petrochemical industries	Legislation passed regarding solid waste MO County option dumping law Feeding trash to pigs Wastewater TD Municipal dumps	Beautification – awareness of littering CWA, CAA>RMN Still burning in back yard	DNR was born SW Mgmt Law City dump closed Love canal EPA established Columbia deposit ordinance is born	Installed waste incinerator at hospital Removed waste incinerator at hospital Recycling picks up again Superfund Farming exemption	Started in Solid Waste SB 530 Recycle center built St. Louis Habitat started first C&D reuse/resale retail operation Fed. Subtitle D regs Centralized landfills Flow control found unconstitutional HHW Plastics up; Metals down Started recycle program Target grants Heart of America Green Builder program - KC CRTs and CPUs Very confused, Yikes Electronics Columbia deposit ordinance dies Biomass

Themes in the Solid Waste Management Timeline:

- Necessity is the Mother of Invention
- Awareness increases with each generation
- Government responsibility increases with each decade
- Population grows – so do the challenges
- Learning experience for the world – rules change constantly
- Convenient society – 2 wage earners increased need for ...
- Disposables increased as technology thrived
- Administrative controls not in place early enough

APPENDIX F

STAKEHOLDER GROUP INPUT

4. Commercial Waste Stakeholder Group

Commercial Waste Stakeholder Group

Draft Plan Input

On May 29-30, 2002, members of the Commercial Waste Stakeholder Group (CWSG) participated in a two day work session. The purpose of this work session was to bring together individuals with diverse viewpoints and experiences regarding commercial solid waste management so that, through a facilitated process, they would provide input for the Missouri Solid Waste Management Plan. The session facilitators were Mr. Jerry Wade and Mr. John Tharp with University of Missouri Extension and Outreach. Staff from the Missouri Department of Natural Resources' Solid Waste Management Program attended, mainly as observers and to manage meeting logistics.

Agenda

The general agenda for the work session was posted:

- 1. Timelines**
- 2. Action Planning**
 - A. Purpose**
 - B. Values and Beliefs**
 - C. Visions**
 - D. Vision Themes**
 - E. Actions**
 - F. Policy**
- 3. Questions and Answers**

1. Timelines

Members of the CWSG and the department's Solid Waste Management Program staff participated in a Timeline exercise at the start of the work session. In this exercise, everyone was asked to jot down significant events on a series of timelines. The three timelines were labeled Personal, National and Solid Waste Management. The CWSG members were asked to review the timelines and list the dominant themes in each. This exercise helped the group get to know each other, warm up for the tasks to come and gain some perspective on the relationships of these three areas of their lives. The results of this exercise are found in Attachment 2.

2. Action Planning

A. Purpose

CWSG members were asked to draft a *Purpose Statement* expressing the reason(s) for developing a Commercial Solid Waste Management Plan. The statement should help guide the development of plan components.

Purpose

The purpose of the Commercial Solid Waste Management Plan is to protect the environment by encouraging the conservation of natural resources and the reduction of solid waste.

B. Values & Beliefs

Following development of the purpose statement, CWSG members were asked to express their *Values and Beliefs* regarding management of commercial solid waste. The values and beliefs put forth should reflect the principles and guiding factors that undergird people's decisions and actions.

This exercise helped each member think about the foundation for his or her own decision making, as well as that of the larger group or society as a whole. Developing the purpose, values and beliefs as a group helped the stakeholders build a common ground of understanding and a realization that "we are all in this together."

The values and beliefs expressed by members of the CWSG were these:

- We believe in the future of our environment and continuing to protect it
- The plan should support businesses and communities with obvious benefits for both
- Environmental concerns and economic growth cannot be considered separately (enviro-economics)
- Incentives to reduce, reuse, and recycle
- The plan should be easily implemented and understood by educating all stakeholders
- The plan should contribute to conserving natural resources and sustaining the environment
- Stewardship of natural resources should be a fundamental business practice
- Plan should include long term goals to develop and achieve economic feasibility
- The plan should facilitate government and businesses to work cooperatively to develop integrated commercial solid waste management programs

C. Visions

Vision tells us where we are going; it is our overall sense of direction, the destination. The CWSG was asked to imagine the type of commercial solid waste management system that would be in place in the year 2027, assuming that the best commercial solid waste plan had been developed and implemented between now and then. The end product of this activity is a series of vision statements. Ultimately, the Vision process is fruitful when it leads to development of specific actions that will enable the visions to be realized.

At a later point in the process, the group was asked to prioritize the vision statements. To do this, each member was given green, yellow, red and blue dot stickers to indicate statements they supported, or those that they personally felt should be eliminated. A key to how the different colors were used is given below. By limiting the number of dots each participant could use, this process forces the individual to choose which statements they felt were most important. Since vision statements may be made that are not supported by others in the group, this process also provided a means to express their opposition. The complete list of vision statements follows, including the dots they received (note: some statements did not receive any dots).

Green Dot = most important	Yellow Dot = important	Red Dot = support, but not as important as Green or Yellow	Blue Dot = eliminate
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Visions for the year 2027

	G	Y	R	B
More businesses saving money by reducing waste	●●●●● ●●	●●●●	●	●
Educated consumers and businesses decontaminating recyclables	●●●●	●	●	
A stable recovery market	●●●●			
A closed loop system replacing waste as resources by commercial businesses in our communities and zero waste	●●●	●●	●●	
Recycled materials implemented in all classrooms	●●●		●	
Collection systems for businesses that are convenient and affordable	●●	●●	●●●●● ●	
State has achieved 98% waste reduction	●	●●●●	●	
New business development using waste to make new products	●	●●●	●●●●	
A 50% reduction in paper, paperboard, cardboard, wood, aluminum, plastics, going to landfills	●	●	●	
All trucks are recycling trucks	●			
Profitable, competitive closed-loop 100% recycled or reuseable materials in retail stores	●			
Economics will have changed making 3 Rs (reduce, reuse, recycle) the rule not the exception		●●●●	●●●●	
Recycling and compaction drop-off facilities in rural counties		●●●●		
Bioreactive landfills		●●		
Every commercial enterprise will have an environmentally sound business plan		●	●●	
Recycling bins have replaced trash cans			●●●	
Closed landfills are used as natural resources			●	
There are no roll-offs or dumpsters that are greater than 8 yd ³				●
Healthier people and less lazy people that want to recycle				●
Higher taxes on disposable items				●●●●●
Electronic speeding tickets				●●●●● ●●●●● ●●●●● ●
Clean roadsides and right-of-ways				
People safely drinking from lakes and streams				
Communities powered by waste, not coal				

Visions for the year 2027 (continued)

Trees, lots of them				
Consumption of only renewable resources				
Vehicles powered by compost				
Degradable packaging				
Recycled content clothing that performs and feels like natural fibers				
Consumers demand manufacturer stewardship in product packaging and design (educate)				
Government at all levels lead by example				
Centrally located recycling compaction sites				

D, E and F. Visions, Actions and Policies Organized by Themes

Vision Themes, or clusters, are groupings of visions with some thread of commonality. Some vision statements can be linked to more than one theme. The CWSG came up with five themes under which the majority of vision statements would naturally fall. These were:

- 1. Economic Development (includes market development and job opportunities)**
- 2. Business Development and Practices**
- 3. Education**
- 4. Resource Sustainability and Technology**
- 5. Environment/Health/Abundant Resources**

The vision themes could then become the connection to action. In a sense, vision themes can be viewed as action areas. *Actions* are the things that need to be done to move from the present toward one or more of the visions in a vision theme. In solid waste management, many of the needed actions in turn indicate a need for a change in policy or adoption of new *Policies*. For this reason, policies are listed separately from other types of actions.

Group members chose one theme to work with, forming six smaller groups. Two groups chose to work on Education, two groups chose to work on Economic Development, however no interest was shown in working on the Environment/Health/Abundant Resources theme. Each group developed a list of actions under their chosen theme. At this point, all group members were given the colored dots described above to indicate support or opposition to vision statements or proposed actions.

Following this step, each group wrote policy statements they felt were necessary to implement the most important actions in their list: policies for the public or state government and policies for the commercial establishments of associated organizations. This document lists the vision statements as they were grouped under the four themes, followed by the actions and policies that were proposed.

Theme 1. Economic Development

D. Visions for the year 2027 associated with this theme

	G	Y	R	B
A stable recovery market	••••			
Collection systems for businesses that are convenient and affordable	••	••	••••• •	
Consumption of only renewable resources				
Degradable packaging				
Economics will have changed making 3 Rs (reduce, reuse, recycle) the rule not the exception		••••	••••	
More businesses saving money by reducing waste	••••• ••	••••	•	•
New business development using waste to make new products	•	•••	••••	
Profitable, competitive closed-loop 100% recycled or reuseable materials in retail stores	•			
Recycled bins have replaced trash cans			•••	
A closed loop system replacing waste as resources by commercial businesses in our communities and zero waste	•••	••	••	
Recycled content clothing that performs and feels like natural fibers				

E. Actions

	G	Y	R	B
Centrally located compaction systems for communities	•			
Reuse waste for energy	••••	•••		
Detailed case studies with how-to advice				
Create more recycled products		•••		
State sponsored advertising	•	••	•	
Start with high value items (e.g. OCC, Metals)				
Business subsidies encouraging use of recycling markets		•		
Huge recognition programs for waste reduction				
Require product stewardship	••••		•	
Mandate recycle bins in all public places				
Support (**proven) struggling end markets (**with potential) with targeted grants		••	••	
Copy those who are recycling effectively	•			
Higher cost for landfill disposal			•	•••• ••••
Surcharge excessive packaging			•	

Theme 1., E. *Actions (continued)*

Target grants for new market research and development (**only after reviewing current research and results. Don't reinvent the wheel)	•	•	••••• •	•
More research to develop or use energy from renewable resources				
Use more biodegradable fibers in products				
Mandate the use of recyclables in the in the public sector			•	•••
Buy recycled to stimulate market			••	

**added by member of a different group

F. *Policies*

Public/State

- State & local governments to offset cost with cash incentives for products diverted from the waste stream to achieve a stable recovery market.
- Public awareness and accessibility to alternatives to waste disposal (i.e., recycling sites).
- State should give purchasing preference to recycled and/or renewable products made in the state of Missouri.
- Provide tax incentives for development of new recycled product.

Commercial/Organizations

- Establish new packaging alternatives and promote recyclable or reusable products.
- Affordable solutions to recovery and reuse of recycled products (i.e., energy).
- Annual waste audits to identify recyclables.
- Preference to procurement of recycled products from Missouri.

**All commercial sources have to participate

**Incentive to reuse, recycle / disincentive to dispose (ingrain as cost of doing business)

**added by member of a different group

Theme 2. Business Development & Practices

D. *Visions for the year 2027 associated with this theme*

	G	Y	R	B
More businesses saving money by reducing waste	••••• ••	••••	•	•
Collection systems for businesses that are convenient and affordable	••	••	••••• •	
All trucks are recycling trucks	•			
Profitable, competitive closed-loop 100% recycled or reuseable materials in retail stores	•			

Theme 2., D. Visions for the year 2027 (continued)

Bioreactive landfills		••		
Vehicles powered by compost				
Degradable packaging				
Recycled content clothing that performs and feels like natural fibers				
A 50% reduction in paper, paperboard, cardboard, wood, aluminum, plastics, going to landfills	•	•	•	
Economics will have changed making 3 Rs (reduce, reuse, recycle) the rule not the exception		••••	••••	
Recycling and compaction drop-off facilities in rural counties		••••		
Every commercial enterprise will have an environmentally sound business plan		•	••	
Recycling bins have replaced trash cans			•••	
There are no roll-offs or dumpsters that are greater than eight cubic yd				•

E. Actions

	G	Y	R	B
Tax incentives for businesses and production companies (use post-consumer materials)		••		
Incentives for re-use or in-kind gift receipt		•		
Grant monies for start-ups, along with low-interest loans		•		
Provide/promote environmentally sound business planning assistance		•		
Additional surcharge or tax to pay for systems				•
Educational program to educate businesses (grants, etc.)				
Market development grants/loans	•••••	•••	••	
Legislative goal of 50% reduction in commercial waste stream				
Local taxes to support facilities in local communities				
Building and reconstruction permits require environmental aspect before issued				

F. Policies

Public/State

- To encourage and promote waste reduction by businesses via financial incentives for market development.
- To increase the manufacture and use of products made from recycled materials.

Commercial/Organizations

- To reach the decision-makers in the boardrooms in regard to the environment.
- Active promotion and information sharing of environmentalism as good business practices.

Theme 3. Education

D. Visions for the year 2027 associated with this theme

	G	Y	R	B
Clean roadsides and right-of-ways				
Educated consumers and businesses decontaminating recyclables	••••	•	•	
Every commercial enterprise will have an environmentally sound business plan		•	••	
Healthier people and less lazy people that want to recycle				•
People safely drinking from lakes and streams				
Recycled materials implemented in all classrooms	•••		•	
A 50% reduction in paper, paperboard, cardboard, wood, aluminum, plastics, going to landfills	•	•	•	
Recycling bins have replaced trash cans			•••	

E. Actions

	G	Y	R	B
Integrate environmental education into all classrooms			••	
Set-up a state agency/committee to reach the schools and businesses, to train and [provide] outreach to manufacturers				•
Invite all business managers to tour a landfill			•	
Incorporate recycling programs for Clean Water Act	••			
Companies donating all of their by-products to teacher recycle centers or recycling centers instead of landfills				
Implement environmental PSA's into all electronic media (including DVD-video games)				•
Invite public to tour recycle centers				
Early childhood environmental education		•	•	
Advertisements of where recycle centers are and how to use them			•	
Partner with media to educate reporters on environmental issues		••		
Offer tax breaks to businesses/corp. for cutting waste	•		•	
Recycle bins/containers in all schools/accessible (parks-public place)				
PR/spokespeople/conferences open to the public				
Initiate neighborhoods/community leaders on how to informally educate others on importance of the 3 R's				
Sponsor a state CEO summit to educate business leaders				
Initiating monthly reports to companies on the pounds of waste/trash they deposit into the landfills			•	•
Audits to companies/how much could have been recycled				
Develop statewide educational marketing plan				
Get buy-in from education/business consumers and media to implement plan			•	
Create user-friendly materials for each group				

Theme 3., E. Actions (continued)

**Mandate c/o of recycled supplies to be used in govt. funded schools	•	•	•	
**Innovative marketing to achieve creative packaging in order to reduce excessive packaging				
**(added to above action) through consumer education that creates demand for less				

** added by member of a different group

F. Policies

Public/State

- Provide education information on how to reach targeted waste reduction goals.
- Prior to *any* legislation, obtain appropriate stakeholder input.
- Develop statewide curriculum to be implemented into all levels of education beginning in early childhood --integrated into all courses.
- Require all municipalities to develop a SWM plan

Commercial/Organizations

- Corporate mission statements should reflect responsibility to the consumer and community for environmental stewardship.
- Commercial entities shall investigate saving money by reducing waste.
- Develop corporate environmental philosophy and instill corporate practices and pride/ownership to employees during orientation and ongoing programs.
- Develop awareness programs that would inform consumers and businesses of mutually beneficial options of reuse of consumable products – market/display successes.

Theme 4. Resource Sustainability and Technology

D. Visions for the year 2027 associated with this theme

	G	Y	R	B
More businesses saving money by reducing waste	•••• •••	••••	•	•
A closed loop system replacing waste as resources by commercial businesses in our communities and zero waste	•••	••	••	
Collection systems for businesses that are convenient and affordable	••	••	•••• ••	
All trucks are recycling trucks	•			
Profitable, competitive closed-loop 100% recycled or reuseable materials in retail stores	•			
Bioreactive landfills		••		
Closed landfills are used as natural resources			•	

Theme 4., D. *Visions for the year 2027 (continued)*

Electronic speeding tickets				••••
Communities powered by waste, not coal				
Trees, lots of them				
Consumption of only renewable resources				
Vehicles powered by compost				
Degradable packaging				
State has achieved 98% waste reduction	•	••••	•	
Recycled content clothing that performs and feels like natural fibers				

E. *Actions*

	G	Y	R	B
Include energy use plans in new landfill permit		•	•	
Acquire federal and state funds through effective planning to get money for technical research				
Plant 1-tree/person/month				
Educate				
Require deposits on all packaging material to encourage return				••
Tree replacement programs	•			
Tax credits for renewable energy/recycling/reuse	•••	•		
Grants to access funds that implement research tech. (compost powered vehicle)	•			
Set-up funding closing/capping landfills				••
Current oil producers must start understanding and producing equipment and techniques to insure sustainability				
Government appointed task force, including private sector, not-for-profit and government, to market and promote environmental technology and reuse	•			
Track/meter landfill technology use				

F. *Policies*

Public/State

- Make economic resources available to fund research.
- State and local governments will take leadership role in implementing the use of available technology for resource conservation (3R's).

Commercial/Organizations

- Commercial organizations must devote a percentage of income to promote product stewardship.
- E.M.S. (Environmental Management Systems) will include a provision for resource conservation.

Note:

In addition to the policy statements, the Education Theme group added this:

How/Why we think this is important – because it provides statewide direction in SWM from the bottom up with diverse stakeholders represented.

3. Question and Answer Session

At the end of the workshop, the members of the CWSG were asked questions by the department's staff. This question and answer session allowed staff to get clarification on Vision, Action or Policy statements or to address issues that did not arise during the workshop. It should be noted that some responses were given by one or more group members, while some represented a group consensus. The notes taken by department staff follow:

1. In the Actions listed for Theme 2, please explain what is meant by “in-kind gift receipt” as an incentive for reuse?

A business can donate used equipment, furniture, etc., to a not-for-profit organization and receive an in-kind gift receipt. The federal government has a process for this type of donation which could be the model for the state. This would encourage the reuse of these items, since the business can use the donated value as a tax deduction. Promote similar things at state level for businesses. Representative from Surplus Exchange said they could provide a copy of the form they use for this type of donation.

2. In the Actions listed for Theme 2, grant money for start-ups are recommended. Did the group intend this to be for a specific type of activity?

We did not intend to focus this on only one type of activity. This would include grants to help existing businesses begin a recycle, reuse, etc., program or for new businesses to manage recycled materials.

3. Many of these recommendations will require funding from the state. Would you recommend increasing the tonnage fee?

Either a reallocation or additional surcharge on solid waste could address funding.

4. One of the Actions under Theme 4 is “Plant 1 tree/person/month.” How do you see this being implemented?

No single entity was recommended to take the lead on this. A good model is the Santa Fe, NM, program where they try to protect the environment through local ordinances and grow only native plants and trees.

5. Expand on the Action under Theme 4 regarding oil producers.

Government should try to create incentives to encourage oil companies to manufacture new/alternative fuels. Used oil burners should be used to provide heat.

6. In the Actions for Theme 1, the reuse of waste for energy is listed. What type of waste?

No specific one. Use not-marketable, non-recyclable items for energy (i.e., coated cardboard). Use yard waste/biomass to make ethanol.

7. Discuss the Action under Theme 1 which would create business subsidies encouraging the use of recycling markets?

Trash haulers pass increased costs onto consumers. Recyclers cannot pass costs on and when markets fall, recycling facilities close. Grant funds need to be set aside to stabilize markets for recyclers (like what is done for farmers). Some felt market development is more important; we need recycling markets closer to collections in our area. Need laws to get programs going.

8. How would a requirement for product stewardship (Actions under Theme 1) be implemented? through legislation?

Yes. Advertising success stories (i.e., Bass Pro computer program) would help. Use model programs to help others.

9. What is meant by the Action under Theme 3 which says to incorporate recycling programs into the Clean Water Act?

This could make companies more aware of stewardship—tying water quality into all issues.

10. Does the Action under Theme 3 regarding a statewide educational marketing plan refer to educating the public?

Educate the public, educators, and businesses. Get the word out.

Appendix 1

Commercial Waste Stakeholder Group

The following individuals participated in the May 29-30, 2002, work session to provide input for the Missouri Solid Waste Management Plan on managing solid waste from commercial establishments.

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TIMELINES

Members of the Commercial Waste Stakeholders Group and DNR Solid Waste Management Program staff participated in a Timeline exercise at the start of the work session. In this exercise, everyone was asked to jot down significant events on a series of timelines. The three timelines were labeled Personal, National and Solid Waste Management. The CWSG members were asked to review the timelines and list the dominant themes in each. This exercise helped the group get to know each other, warm-up for the tasks to come and gain some perspective on the relationships of these three areas of their lives.

TIMELINE HEADING	1930s	1940s	1950s	1960s	1970s	1980s	1990s – Now
PERSONAL	Lake Ozark Grocery Store Mom born	Born Born B-Day 1946 Parents Married College with WWII Vets	Born Born Born Born Born 1951-US Army Law School '53- '56 Springfield Married 1957 Born Born Born Born	Went to Vietnam Went in the Navy Went to Army & Graduated High School High School Grad. Born Born Born Born Born Birth Celebrated 1 st Earth Day while in College Came to USA Girl Scouts gave me appreciation of outdoors	Went back to Vietnam High School and College Graduation 1 st Job High School Grad. Married Daughter born College Grad. 1971 Born Born Born 1 st new car College Graduation '77 College Graduation '72 Birth of Kids Married - kids Born	Retired from USN Seabees Got married Married Daughter born Married Graduated from college Married Graduated from high school and college Graduated from high school and college Married 1989 Career Daughter born High school Kids Kid Graduated college Married and daughter #1 High school Arrived from Scotland	Loss of father '90 Began working in/with environmental programs Birth of children Graduated - began work in recycling Birth of children Started in environmental business Started working in recycling Started new career Established Service Recycling Had 3 kids College Children Started to work in recycling College grad/graduate school Married/kids Changed careers at 45 Kids Daughter #2 Teaching 1995 Started waste hauling business Retired from Chrysler – took job with solid waste-feel guilty about the waste at Chrysler now Married/children Grandkids born

TIMELINE HEADING	1930s	1940s	1950s	1960s	1970s	1980s	1990s – Now
NATIONAL	The Depression Social Security Bagnel Dam, Lake of the Ozarks development	WWII W.P.A. Industrial revo- lution Birth of Baby Boomers (1950s too)	Elvis 57 Chevy Korean War Suburbs Life	Vietnam More government policy-making Rock & Roll Civil Rights move- ment Beatles Start of Urban Flight Vietnam (war?) and Protest JFK EPA - Laws Flower Power	Computer technology 1 st Earth Day Campus unrest – Kent State Keep America Beautiful	“Me” generation Clear Pepsi CD & Video players Bad fashion Fax machine Throw-away society	Flood DOT Com OK City Bombing Tower (2 mi. sq. at base) of garbage burned in Manilla Desert Storm Soccer Moms MORA Lots of information technology - no new information Cell phones Generation Xers Sept. 11 th
SOLID WASTE MANAGEMENT	Garbage haulers started Trash fed to hogs	Tire & scrap metal drives	1 st Solid Waste Management for Missouri	Rachel Carson – “Silent Spring” Illegal dumping survey found 2,600 dumps in MO.	Missouri DNR created Landfill management The 3 R’s Resource reduction – gas shortage, environmental awareness Earth Day U-City began recycling EPA created	RCRA written Residential recycling started Haz waste co’s started reducing waste generated EPA starts to enforce RCRA SARA/CERCLA CAA Large consolidated waste industry	Jeff / St. L. Cnty / St. L. City SW ordinance 1993 Reduce/Reuse/Recycle major emphasis OCC \$200 p/ton 1990 Landfill surcharges implemented Target grants Small landfills disappear Consolidation of trash co. Residential recycling trends Commercial paper markets open-up in far East, then die Landfill bans Subtitle D-Landfills Bridging the Gap and Choose Envir Excellence Yard waste, tires, and major appliance landfill ban St. Louis Teacher’s recycle center opens High recycling prices U. City 1 st electronic recycling event

APPENDIX F

STAKEHOLDER GROUP INPUT

5. Industrial Waste Stakeholder Group

Industrial Waste Stakeholder Group

Draft Plan Input

On October 16-17, 2002, members of the Industrial Waste Stakeholder Group (IWSG) participated in a two day work session. The purpose of this work session was to bring together individuals with diverse viewpoints and experiences regarding industrial solid waste management so that, through a facilitated process, they would provide input for the Missouri Solid Waste Management Plan. The session facilitators were Mr. Jerry Wade and Mr. John Tharp with University of Missouri Extension and Outreach. Staff from the Missouri Department of Natural Resources' Solid Waste Management Program attended, mainly as observers and to manage meeting logistics.

Agenda

The general agenda for the work session was posted:

- 1. Timelines**
- 2. Action Planning**
 - A. Purpose**
 - B. Values and Beliefs**
 - C. Visions**
 - D. Vision Themes**
 - E. Actions**
 - F. Policy**
- 3. Review**
- 4. Questions and Answers**

1. Timelines

Members of the IWSG and the department's Solid Waste Management Program staff participated in a Timeline exercise at the start of the work session. In this exercise, everyone was asked to jot down significant events on a series of timelines. The three timelines were labeled Personal, National and Solid Waste Management. The IWSG members were asked to review the timelines and list the dominant themes in each. This exercise helped the group get to know each other, warm up for the tasks to come and gain some perspective on the relationships of these three areas of their lives. The results of this exercise are found in Attachment 2.

2. Action Planning

A. Purpose

IWSG members were asked to draft a *Purpose Statement* expressing the reason(s) for developing an Industrial Solid Waste Management Plan. The statement should help guide the development of plan components.

Purpose

The purpose of an industrial solid waste management plan is to enhance Missouri as a good place to live and work by providing guidance for sound proactive environmental practices that support a positive economic environment.

B. Values & Beliefs

Following development of the purpose statement, IWSG members were asked to express their *Values and Beliefs* regarding management of industrial solid waste. The values and beliefs put forth should reflect the principles and guiding factors that undergird people's decisions and actions.

This exercise helped each member think about the foundation for his or her own decision making, as well as that of the larger group or society as a whole. Developing the purpose, values and beliefs as a group helped the stakeholders build a common ground of understanding and a realization that "we are all in this together."

The values and beliefs expressed by members of the IWSG were these:

- Strong rural and urban economy – and its promotion.
- We believe in a healthy environment for the state.
- Proactive solid waste management is good business.
- We believe in obtaining and using continued input from stakeholders.
- Government resources and incentives should be used to facilitate better management of industrial waste.
- Industry and government must cooperate.
- Business has an inherent responsibility to be a good corporate citizen.
- The state has an obligation to protect the health and welfare of its citizens, communities, and industries.

C. Visions

Vision tells us where we are going; it is our overall sense of direction, the destination. The IWSG was asked to imagine the type of industrial solid waste management system that would be in place in the year 2027, assuming that the best industrial solid waste plan had been developed and implemented between now and then. The end product of this activity is a series of vision statements. Ultimately, the Vision process is fruitful when it leads to development of specific actions that will enable the visions to be realized.

The complete list of vision statements follows:

Visions for the year 2027

- ◆ 100% recyclable products
- ◆ All materials are recycled or reused
- ◆ All waste products are placed in recycle/reuse containers
- ◆ Balanced utilization of resources
- ◆ Design for recyclability is industry norm
- ◆ Diversified economy
- ◆ Environmental regulations are in a notebook, not a bookcase
- ◆ Everyone involved in industrial solid waste management has integrity, is honest and is having fun
- ◆ Industry uses by-products as raw materials
- ◆ Industry uses predominately renewable energy resources
- ◆ Landfill fees are \$100 per ton
- ◆ Landfills will be called resource recovery repositories
- ◆ Life cycle management is a part of product development
- ◆ Product and packaging take-backs by manufacturers
- ◆ Regulators will be transformed into facilitators
- ◆ Reusable shipping platforms
- ◆ Waste = food (raw materials)
- ◆ Waste exchanges and recycling will be the norm, landfills will be the last resort
- ◆ We see closed-loop industrial processes and industrial parks
- ◆ We will be mining old landfills
- ◆ Zero emissions

D, E and F. Visions, Actions and Policies Organized by Themes

Vision Themes, or clusters, are groupings of visions with some thread of commonality. Some vision statements can be linked to more than one theme. The IWSG came up with five themes under which the majority of vision statements would naturally fall.

Themes:

- 1. Landfills**
- 2. Waste as Raw Material (Recycling)**
- 3. Life Cycle Management**
- 4. Promoting Mutual Goals**
- 5. Waste Management Economics**

The vision themes could then become the connection to action. In a sense, vision themes can be viewed as action areas. *Actions* are the things that need to be done to move from the present toward one or more of the visions in a vision theme. Some group members expressed concern that some of the values and beliefs are not represented by vision statements. They decided to

develop the recommended actions with the list of values and beliefs in mind as well as the vision statements.

Group members chose one theme to work with, forming six smaller groups. Each group developed a list of actions under their chosen theme. When these lists were completed, group members were encouraged to review each other's lists and add any important actions they felt were missing.

Following this review, the group was asked to prioritize the action statements. To do this, each member was given green, yellow, red and blue dot stickers to indicate statements they supported, or those that they personally felt should be eliminated. A key to how the different colors were used is given below. By limiting the number of dots each participant could use, this process forces the individual to choose which statements they felt were most important. Since actions may be proposed that are not supported by others in the group, this process also provided a means to express their opposition.

Green Dot = most important	Yellow Dot = important	Red Dot = support, but not as important as Green or Yellow	Blue Dot = eliminate
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In solid waste management, many of the needed actions in turn indicate a need for a change in policy or adoption of new *Policies*. After developing actions and , each group wrote policy statements they felt were necessary to implement the most important actions in their list: policies for the public or state government and policies for the industrial establishments of associated organizations.

The following section lists the vision statements as they were grouped under each theme, followed by the actions and policies that were proposed.

Theme 1. Landfills

D. Visions for the year 2027 associated with this theme

- ◆ 100% recyclable products
- ◆ Everyone involved in industrial solid waste management has integrity, is honest and is having fun
- ◆ All materials are recycled or reused
- ◆ We will be mining old landfills
- ◆ Waste exchanges and recycling will be the norm, landfills will be the last resort
- ◆ Landfill fees are \$100 per ton
- ◆ Landfills will be called resource recovery repositories
- ◆ Product and packaging take-backs by manufacturers
- ◆ All waste products are placed in recycle/reuse containers
- ◆ Industry uses by-products as raw materials
- ◆ Diversified economy

E. Actions

	G	Y	R	B
\$\$\$ to recycling companies and industrial companies				•
Higher landfill fees to encourage recycling and provide \$\$ for #1	•		•	
Implementation of an easily accessed waste exchange, which all industries are registered			•	
More education to the public/industries about landfills and recycling				
Spiritual awakening				••••• ••
Legislation to direct solid waste management in a positive path for the future			••	
Encourage product development advancement				
Added by members of other theme groups:				
Set landfill fees at level which reflect actual short/long term costs				•••••
Design future landfills as planned resource recovery facilities		•	•	
Collection is recycling based				
Landfill mining research to identify future opportunities				
Streamline process of using landfills as an energy source				
Transfer/landfill/recycling sited together at one facility				

F. Policies

Industry:

Adopt pro-active attitude toward waste management

State:

Promote waste management opportunities

Theme 2. Waste as Raw Material (Recycling)

D. Visions for the year 2027 associated with this theme

- ◆ Waste = food (raw materials)
- ◆ We see closed-loop industrial processes and industrial parks
- ◆ Design for recyclability is industry norm
- ◆ Reusable shipping platforms
- ◆ 100% recyclable products
- ◆ All materials are recycled or reused

D. Visions for the year 2027 associated with this theme (continued)

- ◆ We will be mining old landfills
- ◆ Waste exchanges and recycling will be the norm, landfills will be the last resort
- ◆ Product and packaging take-backs by manufacturers
- ◆ All waste products are placed in recycle/reuse containers
- ◆ Industry uses by-products as raw materials

E. Actions

	G	Y	R	B
Incentives for recycling (grants, loans, tax incentives)	•			
Program to match streams of waste to appropriate end uses (promote and increase waste exchange programs)	••••• •	••		
Promote standardization of packaging components (Missouri, USA, North America)				
All economic \$ (development) should go with resource management info.		•		
Promotion and education of recycling and sound solid waste management practices by both industry and government				
Added by members of other theme groups:				
Develop markets for recycled goods	•	••		
Reduce regulatory roadblocks which discourage by-products being used as raw materials in cement kilns				
Use industry reps to help promote recycling/source separation techniques (e.g. workshops, etc.)				
Develop “transfer stations” for recyclables		•		

F. Policies

Industry:

Reduce material to landfill by X% per year in a cost effective manner

State:

Rewards and promotion for companies that adopt and implement waste reduction policies

Theme 3. Life Cycle Management

D. Visions for the year 2027 associated with this theme

- ◆ Balanced utilization of resources
- ◆ Industry uses predominately renewable energy resources
- ◆ Life cycle management is a part of product development

D. Visions for the year 2027 associated with this theme (continued)

- ◆ Landfills will be called resource recovery repositories
- ◆ Waste = food (raw materials)
- ◆ Design for recyclability is industry norm
- ◆ Reusable shipping platforms
- ◆ 100% recyclable products
- ◆ All materials are recycled or reused
- ◆ Product and packaging take-backs by manufacturers
- ◆ Industry uses by-products as raw materials

E. Actions

	G	Y	R	B
Create an MDNR/AIM information database and clearinghouse			•	
Develop and implement a state managed “carrot/stick” program	•			•
Obtain statewide industrial commitment to product life cycle initiatives			•	
Promote mutual goals, objective, and programs to achieve an adaptive re-use market/economy	•	•	••	
Create a public (govt) facilitation unit (i.e. TAP)				
Educate consumers that life cycle designed products are worth it				
Added by members of other theme groups:				
Create university degree program that encompasses “lifestyle management” theme. Encourage development of lifecycle management/engineering as a profession by creating industrial and govt positions in the field		•	•	•••
Define life cycle management				

F. Policies

Industry:

It is the policy of the company to implement a product stewardship program based on economic based design for the environment and life cycle management

State:

It is the policy of the state to promote waste elimination programs by working with industry to facilitate their life cycle initiatives

Theme 4. Promoting mutual goals

D. Visions for the year 2027 associated with this theme

- ◆ Environmental regulations are in a notebook, not a bookcase
- ◆ Regulators will be transformed into facilitators
- ◆ Diversified economy
- ◆ Industry uses by-products as raw materials

E. Actions

	G	Y	R	B
Streamline laws and regulations to allow regulators to facilitate to the vision	••		••	
Outreach programs to be developed as a 2-way street				
Foster cooperation between industry and government by implementing stronger rewards and recognition		••	••	
Commercially viable recycling industry through venture capital from comm/govt/industry	•	••	••	
Added by other theme group members:				
Develop rural commission to help promote industries to rescue declining areas, much in the same way we “rescued” our cities during the ‘70s		••		••
Have industry provide training to DNR/District Planners in how to assess industrial process/waste auditing			•	

F. Policies

Industry:

Company will search for economical management opportunities before managing by-products as waste

State:

State will streamline laws and regulation and utilize outreach programs to maximize utilization of by-products

Theme 5. Waste Management Economics

D. Visions for the year 2027 associated with this theme

- ◆ Landfill fees are \$100 per ton
- ◆ Life cycle management is a part of product development
- ◆ Design for recyclability is industry norm
- ◆ All materials are recycled or reused
- ◆ Diversified economy
- ◆ Industry uses by-products as raw materials

Visions listed under this theme, but not part of original list:

- Promote, develop and maintain a strong rural and urban economy
- Balanced approach to economic development and industrial waste management
- Provide easy access to govt incentives

E. Actions

	G	Y	R	B
Government and industry to develop landfill cost structures that reflect true costs	•			•
Massive promotion of waste management opportunities & incentives – including cross dept databases, research and education	••	•••••	•••	
Form joint DNR/DED task force that identifies incentives that can be provided to Missouri industries which supports economic growth and sound environmental practices	••••	•	•	
Streamline regulations and permitting process to make more easily use by-products and resources	•			
Allocate more funds for market development		•		
Identify, develop and promote resource recovery markets			•	

F. Policies

Industry:

Companies should have EMS that includes annual goals for % waste reduction

State:

It is the policy of the MDNR to form a task group mandated to work with the DED which creates, implements and facilitates economic growth, environmental compliance and environmental protection

3. Final Review

As a final review of the plan developed by the IWSG, about twenty minutes was spent looking over the work they had done during the two day session. Each theme group was asked to respond to three questions. These questions and the responses follow:

What is missing?

Theme 1: Who and how do we implement the plan?

Theme 2: Shift in emphasis from residential to commercial/industrial

Theme 3: State interagency dialog and initiatives; Regulatory (consequence) component; Existing corrective action needs

Theme 4: Integration with general public

Theme 5: Add to visions a more realistic industry and economic outlook

Any additional ideas?

- Theme 1: Emphasize inter-communication between industry and the community
- Theme 2: DNR to review real and perceived road blocks to waste exchange
- Theme 3: Hold a “key player” action plan meeting (MDNR, DED, Community Development, AIM)
- Theme 4: (No additional suggestions)
- Theme 5: Need a list of attendees for follow-up; Would like to know the time-frame of working model for the plan – bring group back together for final review of staff recommendations

What do you think of your plan? Why?

- Theme 1: 6.4 out of 10 – Input came from many sectors, incorporated many ideas. Vague enough not to cause too many problems
- Theme 2: For plans to work, DNR must formulate policies as a group and present back to this group to insure theme is protected
- Theme 3: 6.75 out of 10
- Theme 4: Good prioritization process
- Theme 5: Need to put emphasis on purpose, values and beliefs vs. visions; Visions too much perfect world instead of realism

3. Question and Answer Session

At the end of the workshop, the members of the IWSG were asked questions by the department’s staff. This question and answer session allowed staff to get clarification on Vision, Action or Policy statements or to address issues that did not arise during the workshop. It should be noted that some responses were given by one or more group members, while some represented a group consensus. The notes taken by department staff follow:

1. The “Life Cycle Management” group recommends that the Missouri Department of Natural Resources (MDNR) and the Associated Industries of Missouri (AIM) creating an information database and clearinghouse. What kind of information should be included?

Online links to show the type and amounts of waste an industry has generated, technical information, announcements of workshops or conferences and financial assistance information. The Missouri Recycling Association and AIM could help develop this data base. There are a lot of pollution prevention data bases available, and other information from groups like Choose Environmental Excellence and Bridging the Gap, but these are fragmented. A single clearing house for this information is needed. MDNR could serve as the conduit for this information.

2. What are the best means to get the word out to industries about programs and services that are available?

It would take 5 – 10 key email addresses of individuals or associations who would spread the info further. For example AIM has approximately 1,700 members. Trade journals would be another means. For the agricultural sector, these trade journals would not be as useful. Agricultural organizations may be a better conduit. County extension offices are disjointed and would not be universally helpful in this effort.

3. Under the theme “Promoting Mutual Goals” what is meant by developing outreach programs as two-way streets?

This means that outreach efforts must be proactive, not just reactive. For example, many of the department’s technical assistance is done in response to a direct request. More assistance could be given by contacting businesses instead of waiting for them to contact the department. Planners with the solid waste management districts would also like to work more with industries in their areas.

4. Many of the recommended actions involve providing incentives. With limited funds, what type of incentives should the state offer?

Streamlining or eliminating regulation which hinders the use of waste materials in manufacturing. Streamline processes – it takes too much time for businesses to do it right. Provide capital incentives to help recycling businesses get started. This could include low interest loans.

5. Can you be more specific on how we can encourage recycling market development? Our current program provides money for equipment. (this question was posed by Ms. Kristin Allan, director of the Missouri Market Development Program, EI ERA)

MDNR and the Market Development Program staff should work with the Department of Economic Development. (Ms. Allan pointed out that representatives from DED are on the Market Development Steering Committee) Contact companies to find out if they are interested in marketing their wastes or receiving wastes. Invite recycling businesses to locate in Missouri to take advantage of the material supply here. Additional suggestions were made to increase waste exchange activity, noting that if this is set up as a profit driven business it will be more successful. The profit motive would likely increase the volume and range of material exchanges between businesses. A place or system which consolidates loads from several sources would save the cost of shipping to markets. Businesses need assurance that they would have no future liability for sending waste to a recycler.

Appendix 1

Industrial Waste Stakeholder Group

The following individuals participated in the October 16-17, 2002, work session to provide input for the Missouri Solid Waste Management Plan on managing solid waste from industries.

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TIMELINES

Members of the Industrial Waste Stakeholders Group and DNR Solid Waste Management Program staff participated in a Timeline exercise at the start of the work session. In this exercise, everyone was asked to jot down significant events on a series of timelines. The three timelines were labeled Personal, National and Solid Waste Management. The IWSG members were asked to review the timelines and list the dominant themes in each. This exercise helped the group get to know each other, warm-up for the tasks to come and gain some perspective on the relationships of these three areas of their lives.

TIMELINE HEADING	1930s	1940s	1950s	1960s	1970s	1980s	1990s – Now
PERSONAL	Born 1929 Parent's born Born Post Depression Dad grows up	Born Moved 2 times Born Parents married Parents married WWII '48 US Air Force Dad goes to war	Born (listed by 11 people) Started school Moved 3 times High school and college Dad starts a family, including me	Became hippie Watched hippies Married Born Me too Started school Out of high school Started farming Graduated First breath '68 retires USAF Moved to Calif when dad became a veterinarian I start to think	Graduated Graduated Graduated Spaced it Married - 1 st time Divorced Married - 2 nd time Married Married Divorced Got a haircut Got a job Got a haircut Got a job College College Kids Grad high school Join Navy Married with children First horse Jail Saddle shoes to combat boots	Married Married Married Grad school Grad school Had kids Kids graduated Kids graduated Out of farming Divorced (listed by 5 people) Married Remarried Grandchildren I-70 World Series (go Royals!) Kids born (listed by 6 people) Joined the Army New Wave Start a serious career	Married Adopted daughter Divorced Divorced Married Married Married More kids born More kids born More kids born Grandkids (listed by 4 people) Started in the environ- mental business Got DNR job Married 20 years (listed by 5 people) Married 25 years Married 25 years Married 25 years Boxed at Madison Square Garden Moved to USA Great-grandkid

APPENDIX G

POLICY ON RESOURCE RECOVERY (Executive Branch Departments)

**POLICY FOR RECYCLING AND WASTE REDUCTION
PURSUANT TO HB 438, 440, 96 & 97
STATE OF MISSOURI
EXECUTIVE BRANCH DEPARTMENTS**

Each department shall develop and implement in cooperation with the Office of Administration, a policy for recycling and waste reduction. RSMo 34.032(4) requires that each department and state agency shall, to the maximum extent practicable, separate paper, corrugated paper, newspaper, aluminum, glass, metals, plastics, waste oils and other recyclable items. The purpose of the Policy for Recycling and Waste Reduction is to establish a coordinated effort in the executive branch departments which provides for a comprehensive system for waste management. The full circle of waste management begins with environmentally conscious procurement practices which advocates purchase of products made from recovered materials and source reduction; collection and processing of recyclable materials; and support for the development of markets for recovered material products.

The accompanying Recycling Implementation Plan identifies several essential elements for implementing a successful recycling collection and waste reduction plan. A broad array of options were developed to maximize the practicality of setting up recycling projects in as many state facilities as economically feasible.

Policy Statement

It shall be the policy of the executive branch departments to implement waste reduction and recycling to the maximum extent practicable considering the amount of recyclables generated in each facility, the local market for recyclable materials, and facility considerations including storage space and fire and safety regulations. The state shall also maximize the procurement of goods that are made from recovered materials, when such products can be reasonably substituted for products made from virgin materials. The state shall also encourage the development of industries in Missouri that recover materials for the purpose of manufacturing other usable products.

Recycling Implementation Plan

Collection

The recycling collection implementation plan contains seven essential elements to ensure effective implementation of the state recycling policy. Program elements may be modified to fit the conditions at a specific state facility as necessary.

Program Coordinator

Each state department shall designate one person (or more depending on the size of the department and major facilities outside of the central region) in an existing position to serve as a Missouri Inter-Agency Recycling Committee (MIRC) member to ensure that the agency and the Office of Administration cooperate in meeting the requirements of Section 34.032 RSMo. Each MIRC member shall designate recycling monitors in each of its office locations where recycling collection is implemented to ensure coordination and implementation of the program and to facilitate the training of departmental employees as to the procedures of the recycling program. The optimal number of recycling monitors shall be one monitor for each 25-50 employees at a state office location.

Separation of Paper

The method of separation of recyclable waste paper generated at an employee's desk will be source separation by that employee. Individual recycling containers will be provided through the State Recycling Activities Fund. When the container of recyclable materials is filled, the container will be emptied for ultimate removal of the recyclable materials to the storage area of the facility. The method of removal will be on prescribed under the *Concentration of Paper* program element.

Concentration of Paper

Due to the variety of our state facilities, it is necessary to have a flexible implementation plan for the concentration of paper and other recyclables. Under all concentration of paper scenarios, central bins will be provided in high-paper generation areas such as copy machines and duplicating centers, copy rooms and central file areas. The preferred method of concentration of paper shall be that employees bring their recyclables from their individual recycling containers to a central bin located in the general work area of that office. Acceptable alternatives to this method may also be, (a) janitors or Missouri Correctional inmate labor pick up the recyclables on a scheduled basis at the individual employee's desk, and (b) janitors or Missouri Correctional inmate labor alternate the collection of recyclables and trash pick up at the employee's desk.

Removal of Recyclables to Storage Area

The removal of recyclable material to a storage area for transportation from the facility will be determined in the individual implementation plan for each state facility that is part of the recycling program. Acceptable removal methods include, (a) removal by Missouri Correctional Enterprises (MCE) to the central storage area (b) by contracted janitorial services, agency custodial crews, Missouri Correctional inmate labor, mail clerks and stores personnel or (c) by another organization which has been contracted for the purpose of such removal.

Storage and Pickup

A secure storage area shall be designated for the concentration of separated recyclables for pickup from the state facility. Storage conditions shall meet all local, state or federal requirements for fire and safety codes. The MIRC member and recycling monitor(s), in the case of a department-managed facility, or the building manager, in a multi-agency facility, will coordinate with the OA/Facilities Management Division and the Recycling Coordinator of the OA/Division of Purchasing and Materials Management to determine the need for special bins, compactors or bailing equipment at the facility storage area. The Division of Purchasing and Materials Management shall set up appropriate contracts with recyclers and other potential purchasers of the state's recyclable waste for the reutilization of such materials.

Confidential Materials

The MIRC member and recycling monitor(s) of each department shall review their needs for the use of special disposal procedures for highly confidential materials. The MIRC member and recycling monitor(s) shall work with the Recycling Coordinator, OA/Division of Purchasing and Materials Management, to develop procedures for the appropriate destruction and recycling of highly confidential materials. Destruction of non-secured confidential material is provided for in the statewide recycling collection contracts.

Separation and Collection – Other Recyclables

Each department, in coordination with the OA/Division of Purchasing and Materials Management, shall conduct a waste audit of each facility on a yearly basis. As part of the waste audit, the recycling monitor(s) shall determine what recyclables are in the waste stream of the specified facility and make a recommendation to the Recycling Coordinator, OA/Division of Purchasing and Materials Management, as the feasibility of collecting them for the purposes of recycling. Such items considered include paper, corrugated paper, newspaper, aluminum, glass, metals, plastics, waste oil and other recyclable items.

Recycling Implementation Plan

Environmentally-Conscious Procurement

Agencies shall strive to maximize the purchase of products made from recovered materials. Such procuring authorities shall also give full consideration to the purchase of products that are recyclable. A recyclable product is any product that can be separated at the point of discard or from the solid waste stream for utilization as a raw material in the manufacture of a new product and for which there is an existing identified accessible market and an existing local collection system in place.

Recycling Implementation Plan

Market Development

The State shall utilize existing state community recycling efforts to develop new markets for recycled materials by encouraging existing manufacturers to include recycled materials in their production processes, and by seeking to attract new industrial users of recovered materials.

The State will also use existing financing programs for new and existing manufacturers involved in resource recovery, materials conversion, or manufacture of products using a high percentage of recovered materials.

The State will also develop informational databases to assist Missouri manufacturers in locating sources of secondary materials and/or markets for these materials. The Missouri Product Finder, which is maintained in the Department of Economic Development will be expanded to include listings of recycling centers, to provide more information on what by-products are available from Missouri manufacturers, and to develop a list of Missouri manufacturers that currently use or could use secondary materials in their production processes.

To encourage community recycling programs, the Department of Economic Development will explore the possibility of using Neighborhood Assistance Program tax credits for establishment of community-based recycling centers and include a recycling plan as part of the Missouri Certified Cities certification program.

To promote the development of new markets in Missouri for recycled materials, the Department of Economic Development will explore the application of the new jobs/investment tax credit program for investments made by companies to modify their production processes to include recycled materials, to purchase equipment needed for recycling and to being new enterprises that use recycled materials.

APPENDIX H

SOLID WASTE AWARD AND RECOGNITION PROGRAMS

Solid Waste Award and Recognition Programs

The award and recognition programs listed below are based on information available in May, 2004. While these may change and the list is not comprehensive, it does give a good idea of the types of recognition that may be available to Missouri citizens, businesses, organizations and governments.

- **Missouri Governor's Environmental Excellence and Pollution Prevention Awards**

The Governor's Environmental Excellence and Pollution Prevention Awards honor businesses, organizations and communities that have shown outstanding commitment to improve Missouri's environment. Sponsored by the Missouri Chamber of Commerce and Industry, the Missouri Department of Natural Resources, and Bridging the Gap, the awards recognize individuals, employers, municipalities, and institutions working to benefit both Missouri's economy and environment. Awards focus on pollution prevention activities, innovative technologies, improvements in energy efficiency, recycling, or education and outreach activities.

- **Missouri Recycling Organization**

Presidents Award

To recognize an individual who has shown a high degree of dedication to the development and advancement of recycling through his or her achievements and long term-commitment. The reigning President of MORA will choose the winner of this award.

Outstanding Business Recycling/ Waste Reduction Program

To recognize a business for success in implementing waste reduction and/or recycling activities which have resulted in significant reductions to its waste stream. Specific criteria include: (1) Types and quantities of materials recycled; (2) Types and quantities of wastes reduced or eliminated; and (3) Total percentage of waste stream diverted.

Best Use of a Recycled Material

To recognize a business that has demonstrated a commitment to using recycled feedstock in manufacturing of a product. Specific criteria include; (1) Percent of recycled content in the manufacturing of a product. (2) Types and quantities of recycled feedstock used; and (3) Resources conserved by using a recycled feedstock in place of virgin raw materials.

Outstanding Recycling Education Program

To recognize an individual or group for commitment to educating others about the need for, and benefit of recycling and waste reduction. Specific criteria include: (1) Length of service in recycling/waste reduction. (2) Description of innovative or unique program, and (3) Type and size of audience impacted.

Outstanding Community or Government Program

To recognize outstanding community recycling program. The award recipient will be providing successful recycling opportunities for residents. Specific criteria include: (1) Percentage of population served, (2) Types and quantities of material collected, and (3) Track record of growth and commitment to future enhancements.

Other Potential Categories

Nominations may be submitted to recognize outstanding efforts other than those in the above categories. Examples might include: (1) Outstanding Service provider (such as a hauler), (2) Outstanding Government Leadership, (3) Outstanding Household Hazardous Waste Program, (4) Outstanding Paint/Tire/ or Electronics Program, (5) Small Town Recycler, or (6) Volunteerism in recycling.

- **Missouri Waste Control Coalition**

Outstanding Achievement Awards In Waste Management – Categories:

Business: awarded to a private business such as contracting, consulting, industrial, private facility operator, resource recovery, or manufacturing, whose actions and attitudes have surpassed the necessary requirements to meet or exceed regulatory guidelines or who have made a unique contribution to waste management practices.

Government: recognizes the contributions of a state, local or federal unit of government, a government employee, or an elected/appointed official in resolving waste management problems.

Education: presented to a student, an educator, a school, or other educational institution whose efforts have facilitated a better understanding of Missouri's natural environment and/or proper waste management practice.

Citizen/Non-Profit: given to an individual citizen or non-profit organization whose efforts have promoted proper waste management practices.

Coalition Contributions: recognizes an individual whose efforts have contributed significantly to the development and growth of the Missouri Waste Control Coalition.

Special Recognition: is reserved for outstanding lifetime achievement in the waste management field.

- **Conservation Federation of Missouri**

Conservationist of the Year

For the most outstanding overall conservation effort and achievement, most significant contribution to the cause of conservation or toward solution of a major conservation

problem in the state during the year. This effort can be in any area of natural resource conservation.

Air Conservationist of the Year

In areas where pollution is a crucial problem, separate recognition for outstanding efforts in this field may be given in addition to or in lieu of the Water Conservationist of the Year. This similarly applies to solid waste, pesticides, or any other area of environmental concern.

Professional Conservationist of the Year

For the most outstanding accomplishment during the year by a professional in the field of conservation or natural resource management in Missouri.

Conservation Educator of the Year

For the outstanding conservation effort in education in the state. Recipients should have accomplished and demonstrated recognized education methods directed toward the conservation of natural resources.

Conservation Organization of the Year

For the outstanding contribution to the conservation effort by a state organization during the year. Federation chapters are eligible for this category and statewide or local bona fide organizations including but not limited to garden clubs, civic organizations, women's clubs, rod and gun clubs, etc. Private corporations may also be nominated in this category. Recipients should have also demonstrated keen interest in projects and programs within the state which deal with basic and serious natural resource problems and should have evolved an action program stemming from that interest.

- **Choose Environmental Excellence – Gateway Region**

Environmental Excellence Awards

These annual awards are presented to businesses, organizations, schools, individuals, and faith communities throughout the Greater St. Louis Region that have taken exemplary steps toward becoming more environmentally responsible.

- **American Forest and Paper Association**

2004 Environmental & Energy Achievement Awards Program

Eligibility: Any AF&PA member company engaged in timber growing and harvest or in the manufacture of pulp, paper and paperboard or solid wood products may enter. Only companies (no individuals) may submit entries. A company may include names of individuals and/or departments, divisions, etc., as part of the entry. Companies may submit as many entries as they wish. However, each such entry must be treated as a separate application. Entries may be made for any U.S. based facility, regardless of the location of company headquarters.

Entrance Criteria: The Entry Form includes several questions that will help an applicant determine if it has a qualified entry. The only additional general criteria for entering are as follows:

- The achievement must have become actual practice at some point in calendar year 2003. Its development may have taken place over any period of time, but its successful implementation must have been in 2003.
- The achievement must be one that does more than merely comply with Federal, state or local regulations.
- Experimental or pilot projects do not qualify as entries.

- **Air and Waste Management Association**

Richard Beatty Mellon Award

This award-established by resolution of the Board of Directors on February 12, 1954-is awarded to an individual whose contributions of a civic nature-whether administrative, legislative, or judicial-have aided substantially in pollution abatement in some field related to the mission and objectives of the Association. To be eligible for the award, individuals must have made a sincere, constant, and unselfish effort over a period of time and in a manner best suited to his/her own resources, to develop or increase interest in, or acceptance of, the cause of air pollution control and waste management for the betterment of the environment. The award is not limited to any specific area of endeavor.

Richard Beatty Mellon established the Mellon Institute of Industrial Research in 1913. He showed great interest in the abatement of urban smoke and air pollution and was a leader in incepting and sustaining the first modern investigations of the control of air pollution. The Richard Beatty Mellon Award may be awarded to members and nonmembers of the Association.

The Waste Management Award

The Waste Management Award -- established by the Board of Directors on June 29, 1989 -- is awarded for:

- Outstanding achievements in the science and art of waste management. The accomplishment on the part of the recipient is technological in nature and widely recognized by persons in the field; OR
- Outstanding achievement in the management, prevention and regulation of wastes. The recipient may be an employee in government, industry, education or research, whose accomplishments have led to minimizing the impact of waste in the environment; OR
- Distinguished achievement as an educator in the field of waste management

J. Deane Sensenbaugh Award

The J. Deane Sensenbaugh Award was instituted in 1989 to recognize a company or individual outstanding achievement in the fields of air pollution control or waste management. Air pollution technical achievements worthy of consideration include, but are not limited to, specific processes which minimize or more effectively control air

pollution, new air pollution equipment, and improved management practices which reduce air pollution or examine its impacts (such as sophisticated models). Material/waste engineering projects worthy of consideration include, but are not limited to, production process changes that minimize by-product formation, process for recycling/reuse of by-products/wastes, applied novel techniques for destroying wastes and overall improved systems for waste disposal. The recipient shall be a company or individual whose contribution to the state of the art technology has been recognized and accepted in commercial status within the ten-year period prior to the request for nominations.

The award was established to honor J. Deane Sensenbaugh, an environmental engineer, who was active in the Association for more than 25 years before his death in 1982. He served as Chairman of the Technical Council from 1976 to 1979 and completed a term as Association Vice President and member of the Board of Directors only few months prior to his death.

- **National Recycling Coalition - Recycling Award**

NRC's Annual Awards

Each year, the NRC presents awards to outstanding organizations and individuals in a number of categories, as listed below.* Winners are selected by a committee of NRC members and the awards are presented during the NRC's Annual Congress & Exposition. We typically seek nominations for the following awards each year:

- Recycler of the Year – Lifetime Achievement
- Outstanding Community or Government Program
- Outstanding Recycling Innovation – Product or Process
- Outstanding Environmental & Community Leadership (McClure)
- Outstanding Corporate Leadership (Schmitt)
- Outstanding School Program (all levels)
- Outstanding Market Development
- Outstanding Public Education (Boettner)
- Outstanding Minority Business/Individual Award
- BRBA Best Business or Government Buy Recycled Program
- BRBA Best State Buy Recycled Campaign
- BRBA Award for Innovative New Product or Material

*List of awards is subject to change year to year.

NRC's Recycling Works Recognition Awards

NRC presents its Recycling Works Recognition Awards to honor organizations that have made significant commitments to recycling as national advocates and leaders. These organizations demonstrate every day that recycling really does work! These awards were first presented in 1998 and have been presented annually since then during a dinner and reception in December in Washington, D.C.

NRC's Stewardship Awards

NRC's Stewardship Awards recognize innovative and committed leadership in recycling and environmental stewardship. NRC first presented these awards at the 20th Annual Congress & Exposition in Seattle in January 2002. NRC presented the Stewardship Awards again in Austin, Texas on September 10, 2002.

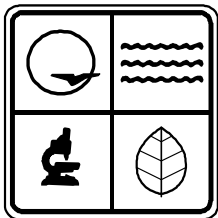
APPENDIX I

EXECUTIVE SUMMARY: A MISSOURI PLAN FOR THE SAFE MANAGEMENT AND COLLECTION OF HOUSEHOLD HAZARDOUS WASTE, FAMILY FARM WASTE, CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR WASTE AND DO-IT-YOURSELFER USED OIL (2000)

EXECUTIVE SUMMARY

A Missouri Plan for the Safe Management and Collection of Household Hazardous Waste, Family Farm Waste, Conditionally Exempt Small Quantity Generator Waste and Do-It-Yourselfer Used Oil

January 2000



This project was funded by the
MISSOURI DEPARTMENT OF NATURAL RESOURCES
Technical Assistance Program
(573)-526-6627 or 1-800-361-4827
Printed on Recycled Paper

EXECUTIVE SUMMARY

Why is it important to be concerned about household hazardous waste? Society has become dependent upon a wide variety of goods and services that make life easier or more convenient. Unfortunately, some of the products, or resulting wastes, may pose a risk to human health or safety, or cause some type of damage to the environment. Almost every home contains household products that are hazardous, such as cleaning products, automotive products, paint and lawn and garden chemicals. These are considered household hazardous products if they contain chemicals that can present acute and chronic hazards to human health and to the safety of people handling them. Household hazardous products contain chemicals that can: corrode or dissolve materials by chemical action and burn or injure skin; ignite or have the ability to burst into flames; explode or produce deadly vapors; or be poisonous or lethal when ingested, inhaled or absorbed through the skin. When household hazardous products are not used completely and are discarded, they become household hazardous waste (HHW). When HHW is not disposed of responsibly, its effects on the environment can include damage to drinking water and ground water, septic systems and sewage treatment plants and has the potential to endanger the health and safety of persons coming into contact with it.

HHW Plan Development

The Missouri Legislature enacted Senate Bill 60/112 in 1995. DNR and the Environmental Improvement and Energy Resources Authority (EIERA) were given the responsibility to “administer the management of household hazardous waste and agricultural hazardous waste from family farms and family farm corporations, to provide for establishment of an education program and a plan for the collection of household hazardous waste on a statewide basis by January 1, 2000.” DNR and EIERA also added Conditionally Exempt Small Quantity Generator (CESQG) hazardous waste and do-it-yourselfer (DIYer) used oil to the planning process. CESQGs can include local governments, schools, hospitals and businesses that produce small quantities of hazardous waste. Often times, waste generated by CESQGs is similar in nature to HHW and they too experience problems similar to household residents securing convenient and affordable waste disposal. Used oil generated by households (DIYer used oil) and by exempt farmers may also be accepted at HHW facilities that comply with regulations for do-it-yourselfer used oil collection centers.

In response to the 1995 legislation, DNR formed an internal steering committee, with representatives from the EIERA and various programs in the Division of Environmental Quality. The purpose of this committee was to guide the process and timing for writing the plan. A technical advisory group (TAG) was also formed with interested persons from within and outside DNR. The purpose of TAG was to broaden the exchange of ideas on HHW issues. DNR invited Missouri businesses, the solid waste industry, the farm community, local government offices, and interested citizens to participate in TAG to provide technical information for the plan. TAG formed committees to address finance, collection and education, and played an active role identifying the goals, objectives and action steps for the plan. This group aided in building consensus on policy recommendations and facilitated preparation of the plan.

HHW Problems and Issues in Missouri

It is becoming increasingly accepted that it would be better to manage HHW, CESQG, farm hazardous waste and DIYer used oil in designated programs for collection and recycling. Programs are needed that will manage these hazardous chemicals safely and properly in order to minimize actual and potential problems. There are many reasons why mismanagement of HHW currently takes place. Major problems and issues that Missouri citizens face in trying to properly handle, store and dispose of HHW include:

- the average home can accumulate as much as 100 pounds of hazardous products; people often improperly use, store and dispose of these products due to a lack of information or wrong information on the subject of HHW;
- because of the dangers they pose, household hazardous products should receive special handling and collection;
- safety in the home, especially for young children, is another reason for concern about stockpiles of hazardous products, especially old, often more dangerous products;
- some hazardous household products threaten our waste systems, the environment, and local government employees such as sanitation workers, police and fire fighters, if not disposed of properly;
- in order for long-term implementation of any management plan to be successful, environmental education is essential for the public to know how to prevent, manage or dispose of HHW in order to safeguard human health and the environment.
- permanent collection facilities can be an effective and convenient solution for citizens to dispose of their HHW; however, due to the lack of facilities currently available to Missourians, HHW disposal is currently very inconvenient and inaccessible;
- one of the biggest problems for municipalities, groups or individuals to overcome is funding a collection event or permanent facility; and,
- HHW projects currently must compete with other solid waste projects based upon a variety of criteria, including the amount of tonnage diverted from landfills, for available state project and district grants.

HHW Legislation and Regulations

Because of its nature, HHW has characteristics that result in the applicability of both hazardous waste and solid waste requirements. As a result, there are overlaps and inconsistencies in its oversight and management. The following summarizes current legislative or regulatory requirements for HHW in Missouri:

- HHW is exempt from hazardous waste regulations, not because it is not hazardous, but because EPA did not want to regulate wastes generated by consumers in their homes. However, in setting standards for HHW collection, we must recognize that health and environmental risks are associated with the mismanagement of HHW.
- The Missouri Hazardous Waste Management Law (MHWML), Section 260.432, known as “Operation SafePlace,” clearly directed the department to establish and promote a

program for the collection and disposition of small quantities of hazardous waste from persons, firms, corporations, state departments and institutions, and political subdivisions.

- Section 260.325 of the Solid Waste Management Law required solid waste management plans to: 1) delineate provisions for the separation of household waste and other small quantities of hazardous waste at the source or prior to disposal; and, 2) establish procedures to minimize the introduction of small quantities of hazardous waste, including household hazardous waste, into the solid waste stream.
- The MHWML has a sanitary landfill ban that prohibits all but de minimis amounts of hazardous waste from disposal. Wastes generated by CESQGs and from farmers in anything other than insignificant or de minimis amounts cannot be legally disposed in Missouri's sanitary landfills.
- Missouri allows CESQGs to generate and/or accumulate only 220 pounds of hazardous waste at any time, as compared to federal standards that allow CESQGs to accumulate 2200 pounds, before they are subject to regulation as a small quantity generator.
- Currently, in Missouri an HHW facility cannot accept CESQG wastes. The federal rules clearly allow facilities that are "permitted, licensed, or registered by a state to manage municipal or industrial solid waste" to accept this material.
- Missouri's conditional exemption for farmers is less stringent than federal regulation. The MHWML conditionally exempts farmers whom have small quantities of hazardous waste. The federal hazardous waste regulations have no similar exemption for farmers. At the federal level, farmers are exempt from hazardous waste regulation only if they triple rinse pesticide containers and dispose of the pesticide residues on their own farm in a manner consistent with the label. Farmers have only this one exemption, and for any other hazardous wastes they generate, they must act as any other generator of hazardous waste.
- The MHWML does not distinguish between individual family farms, farming partnerships, farming corporations, or farms that are managed by cooperatives, estates, trusts or institutions. However, the statutory authority for the HHW plan, Section 260.335, RSMo, is specific to family farms and family farm corporations.
- The Universal Waste Rule (UWR), adopted into Missouri regulations in 1999, relaxes the accumulation, storage and transportation procedures for certain widely-generated wastes, such as pesticides, mercury-containing lamps, switches, thermostats, manometers and batteries. An HHW facility can accept universal waste from householders, farmers or CESQGs, if they meet the management standards for the UW waste types they accept. An HHW facility can *not* accept hazardous waste that is not universal waste from a CESQG.

Education Program

Missouri statutes call for an education program to be developed in conjunction with the collection plan. The education program will inform people and motivate them to reduce, wisely use and safely dispose of HHW and related waste. A separate companion document to the HHW Plan has been prepared, entitled “An Education Program for Household Hazardous Waste Management.”

Management Methods

HHW program information indicates that many individuals believe hazardous household products and related materials pose a significant concern. Materials are stored in homes for long periods rather than being discarded. The Missouri Legislature has acted three times since 1987 to provide funding and direction for collection of HHW or small quantities of hazardous waste.

HHW is estimated to amount to about one percent of municipal solid waste. Data from 1998 Missouri collection programs indicate that approximately 2.3 percent of HHW disposed is being collected. Collection program participation rates are not available for Missouri. Other state's data show that an average of about three percent to five percent of persons participate in collection events, with a maximum of about 10 percent. Improper handling and disposal of hazardous household products and waste, fortunately, have resulted in only occasional safety, health and environmental problems.

Establishing a network of programs to provide collection of household hazardous waste on a statewide basis is estimated to cost between \$12 and \$15 million. Annual operating costs would be about \$3 to \$6 million depending on the collection program approach.

Effective management should address 100 percent of these waste materials, not five percent or 10 percent that may be held and delivered to collection centers by concerned, motivated individuals. However, no single management approach, other than disposal in the trash for subsequent landfilling, can approach a 100 percent level. Missouri needs a multi-faceted management approach that includes front-end, mid-level and back-end strategies. Such an approach is based on the waste management hierarchy: reduce first, reuse what cannot be reduced, recycle what cannot be reused; waste that cannot be prevented, reused or recycled should be treated in an environmentally safe manner; environmentally safe disposal or release should be employed only as a last resort.

Hazardous materials use reduction can be promoted through several complementary and parallel courses of action. The plan recommends that the State of Missouri should establish a hazardous materials use reduction target as a legislative goal. Consistent with actions related to used oil and CESQG hazardous waste, the legislature may wish to consider a ban on disposal of HHW in landfills.

Missouri statutes to control toxic and other hazardous materials need to consider the life cycle of a product, not just a particular stage such as disposal. Opportunities to change the

negative characteristics of a product exist during product conceptualization, development and manufacturing. No such opportunities exist when it is on store shelves. To do this, the Missouri Legislature should consider methods of extended producer responsibility, including manufacturer take-back requirements.

The plan recommends that the legislature should also consider excise taxes for hazardous products with revenue being directed to consumer education, support of collection programs, and other controls for small quantities of hazardous waste.

Greater emphasis should be given to consumer education informing persons, whether householders, farmers, small business owners, purchasing agents and others, about problems associated with inappropriate use and disposal of hazardous materials. Consumer education, in a broad sense, should enable persons to recognize hazardous materials, seek out and purchase safe effective substitutes, properly handle and store these materials, use them fully for their intended purpose, and dispose of unavoidable residue in a safe manner.

There will be hazardous consumer products for the foreseeable future, and there will be residues from these products that need to be appropriately managed. There is a continuing need of sites where unused products or residues can be handled and distributed for their intended use, reuse, recycling or safe disposal. The most convenient and effective way to do this is through collection programs. There is increased effectiveness of HHW collection when combined with solid waste disposal or recycling. It appears worthwhile to consider similar joint approaches to the collection of recyclable items, solid waste and small quantities of hazardous waste, including HHW, universal waste and CESQG waste.

There will always be wastes that cannot be reduced, reused, recycled or completely treated going into landfills, along with materials that are inadvertently disposed of as trash. To protect Missouri's environmental quality, landfills need to be designed to safeguard against contamination of air and water and to protect surrounding properties. Subtitle D landfill requirements do this and have been implemented in Missouri since 1995.

There is no easy solution for the management of HHW, family farm hazardous waste and other small quantities of hazardous waste. A single emphasis management strategy will not result in effective protections. A strategy based on the waste management hierarchy is needed to achieve significant reductions, safe use and controlled disposal of toxic and other hazardous materials.

Financial Considerations

One of the biggest impediments to the establishment of HHW collection programs is the high cost, which can easily exceed \$1 per pound of material collected. To be successful, a program must have assured funding. If community leaders and the general public are educated and made aware of the hazards of HHW and how to reduce, properly handle and dispose of it, they will understand the benefits of an education and collection program and will be more likely to fund one.

The more common funding methods used nationally for HHW programs include: general revenue taxation, solid waste disposal fees, wastewater fees, participant fees, grants, contributions, in-kind support and volunteered time. In some states, lottery revenues, hazardous product excise taxes, specially created grant programs, and public-private partnerships have been used to fund and foster HHW programs. In Missouri, solid waste management grants, local government funds and contributions of money, services or labor are the primary methods of program financing.

Monitoring and Evaluation

It is important to incorporate a process of monitoring (collecting data and information) and evaluation (determining worth) into this household hazardous waste management plan in order to know if or to what extent the goals of the plan have been achieved. As the plan is implemented, it will be necessary to determine its effectiveness in establishing programs, facilities and procedures for statewide management of household hazardous waste. To do this, the goals and objectives of the plan are translated into measures of success with indicators that can be used to identify those aspects of HHW management in Missouri that are effective and those that need additional attention.

HHW Collection Plan Vision and Mission

Citizens of Missouri need to understand HHW issues, recognize appropriate solutions and be able to act accordingly to implement those solutions. Using hazardous products brings with it the obligation to eliminate or reduce these negative impacts. Hence, the **vision** of this plan is...

To protect citizens' health and the environment from the adverse effects of improper use, handling, storage and disposal of hazardous materials used in households, on farms, and in businesses and institutions in Missouri.

In keeping with this vision, the **mission** of this plan is...

To provide guidance on safe alternatives, reduction, use and storage of hazardous materials and to guide the reduction, recycling, collection and proper disposal of these waste materials from family farms, corporate family farms, households and conditionally exempt businesses and DIYer used oil.

HHW Collection Plan Goals and Objectives

There are five interdependent goals that provide the structure for the plan's recommendations.

1. Goal: Hazardous Materials Use Reduction

Promote hazardous materials use reduction in Missouri's households, farms, workplaces and institutions as the preferred means for decreasing exposure to and release of toxic, ignitable, corrosive and reactive materials and waste.

Objectives:

- Establish a percentage reduction goal in state statutes related to the generation and disposal of hazardous wastes from households, farms and conditionally exempt small quantity generators, and consider banning household hazardous waste from disposal in Missouri's municipal solid waste landfills.
- Evaluate the benefits of and consider establishing excise taxes for hazardous products.
- Advocate the concept of overall responsibility of manufacturers, wholesalers and retailers of household hazardous products for the lifecycle of products from conceptualization through production, packaging, transportation, storage, sales, use and ultimate disposal to minimize risks to human health and the environment.
- Coordinate responsibilities of various government agencies to clarify and improve compliance with statutory and regulatory requirements and to remove barriers that impede the implementation of programs to manage HHW, CESQG, family farm waste and DIYer used oil.

2. Goal: Education and Information

The major alternatives for managing HHW recommended in this plan are source reduction, and collection for recovery or appropriate treatment and disposal. Both alternatives are dependent upon a broadly based and effective education program that will provide Missouri citizens with the education, information and training that will promote the understanding, skills and motivation to support and participate in source reduction and collection activities for the management of HHW, family farm hazardous waste, CESQG waste and DIYer used oil.

The success of any HHW management strategy depends on the involvement of the people who generate the wastes. Citizens of Missouri need to understand HHW issues, recognize appropriate solutions, and be able to act accordingly to implement those solutions. To accomplish this, *An Education Program for Household Hazardous Waste Management*, a companion volume to the plan, is designed to help HHW managers inform consumers about the environmental and health and safety concerns regarding HHW, and how their actions can help to reduce these problems. It is necessary to educate citizens about the importance and

practice of reducing waste at its source, possibilities for reuse and recycling, and safe and effective treatment and disposal methods. Success of the plan and education program cannot be achieved without collaboration among many diverse groups.

The Education Program Goals are:

1. Promote general public awareness of problems that result from the improper use, handling, storage, or disposal of household hazardous products and waste as a rationale for informed practices and use of less hazardous products.
2. Provide interest groups with a sound understanding of HHW and related issues and prepare them to advocate and promote to the public a wide range of management solutions.
3. Provide consumers with the necessary knowledge, skills and motivation to participate in HHW collection events and other management strategies.
4. Provide HHW managers with the expertise and decision making capability to safely and effectively manage HHW in their communities.

3. Goal: Program Development and Implementation

Establish regional HHW programs across the state to effectively provide education and information and to ensure adequate availability and accessibility of collection services in Missouri.

Objectives:

- Provide technical support for the development and implementation of HHW programs.
- Develop HHW program guidance materials related to management options and operational policies and procedures for one-day, mobile, regional and permanent programs.
- Encourage existing programs to share management practices, exchange information and mentor the development of new programs.
- Monitor developments in HHW management on a national level and introduce new approaches and innovative techniques to Missouri programs.

4. Goal: Financial Considerations

Provide assistance in developing and procuring funding opportunities for HHW programs.

Objectives:

- Develop recommendations to the Missouri Legislature to provide appropriate funding to support HHW collection and education by carrying out the previous legislative mandates from 1986, 1990 and 1995.
- Encourage local governments to utilize various forms of existing revenues to fund HHW collection and management.
- Provide mechanisms to increase and refocus the amount and availability of grant and loan money for HHW collection programs by emphasizing utilization and improvement of existing funding structures within DNR, and redirect project grant monies toward longer-term projects.
- Identify and evaluate new mechanisms to create sources of funding for HHW efforts.

5. Goal: Monitoring and Evaluation

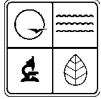
Oversee the implementation of the plan through data collection, evaluation, periodic reporting and updates to ensure plan goals are being achieved.

Objectives:

- Establish procedures and formats for data collection and reporting in order to compile statewide information on HHW management and progress.
- Provide feedback and dissemination of results to local collection programs to encourage continuing program development and effective management.
- Review the plan initially after three years, and then subsequently every two years, to evaluate plan progress, revise goals and objectives, if needed, and re-define tasks.

APPENDIX J

MISSOURI DEPARTMENT OF NATURAL RESOURCES' TECHNICAL BULLETIN “THE UNIVERSAL WASTE RULE IN MISSOURI”



The Universal Waste Rule in Missouri

Hazardous Waste Program technical bulletin

7/2003

What are Universal Wastes?

Universal wastes are hazardous wastes, but not all hazardous wastes can be universal wastes. In order to be a universal waste, a hazardous waste must meet certain criteria established by the Environmental Protection Agency (EPA). In general, to qualify as a universal waste a hazardous waste must be widespread, commonly found in medium to large volumes, exhibit only low-level hazards or be easily managed. It is important to note that disposal of hazardous wastes in Missouri sanitary landfills (except by households or de minimis amounts from conditionally exempt generators) has been illegal since Jan. 1, 1994 (Section 260.432 RSMo). Universal wastes in Missouri's rule include the following items:

- **Batteries**, such as nickel-cadmium (Ni-Cd) batteries, mercury, silver or lithium "button" batteries and small, sealed lead-acid batteries found in electronic equipment, mobile telephones, portable computers and emergency backup lighting. Those who generate lead-acid vehicle batteries have the option of managing their uncracked lead-acid batteries under the provisions of Title 40 of the Code of Federal Regulations (CFR) Part 266.80 or the Universal Waste Rule, in 40 CFR Part 273;
- **Pesticides** that have been recalled or banned from use, are obsolete, have become damaged or are no longer needed due to changes in cropping patterns or other factors. These have often been stored for long periods of time at businesses or in sheds or barns. In Missouri, pesticides cannot be sent to other universal waste handlers, but may be sent to a universal waste pesticide collection program, to a Missouri Certified Resource Recovery Facility or to a Universal Waste Destination Facility. Missouri does not allow transmission of pesticides between handlers due to the high toxicity level of these wastes and the belief that additional controls are necessary to assure adequate protection of human health and the environment when these wastes are handled. In addition, universal waste pesticide collection programs in Missouri must comply with the "Standard Operating Procedures for Universal Waste Pesticide Collection Programs in Missouri" that are referenced in the rule. Pesticides may be transmitted between pesticide collection programs that are in compliance with the rule. Missouri also added an option for allowing Missouri Certified Resource Recovery Facilities to accept pesticides if their certifications allow;
- **Thermostats**, mercury switches and mercury containing thermometers and manometers that are found in homes and commercial, industrial, agricultural and community buildings; and
- **Mercury containing lamps** that include fluorescent, high-pressure sodium, mercury vapor, metal halide and high intensity discharge (HID) lamps.



Mercury switches, mercury-containing thermometers and manometers were added by Missouri to the original list of wastes (i.e., thermostats, batteries and pesticides) that may be managed under the provisions of the Universal Waste Rule. Hazardous incandescent lamps were added to federal universal waste regulations adopted by Missouri effective Nov. 30, 2001.

What is the Universal Waste Rule?

The Universal Waste Rule is a set of federal environmental regulations adopted with modifications by Missouri. The effective date of the rule in Missouri was Jan. 31, 1999. The rule can be found in Chapter 16 of the *Missouri Hazardous Waste Management Regulations*, which references portions of 40 CFR Part 273. This rule identifies all universal wastes in Missouri and states how they can be handled in a lawful manner. To completely understand the rule, you should read both state and federal regulations, because the state often references the federal standards. The rule was designed to give generators of certain types of hazardous wastes an option to manage those wastes under less stringent Universal Waste Rule requirements rather than by the more stringent existing hazardous waste regulations. This alternative is offered to help reduce the regulatory burden on businesses and others that generate certain common hazardous wastes and to encourage collection, recycling and proper disposal of these wastes.

By reducing administrative requirements, this rule is expected to save companies compliance costs and to reduce the amount of time spent on paperwork. The rule is expected to encourage collection and recycling programs, that will result in more options to businesses, farmers and households for legal and cost-effective management and disposal of universal wastes. The wastes covered under this rule are described in the “*What are Universal Wastes*” section of this bulletin.

Note: The management options noted in the Missouri Department of Natural Resources’ Technical Bulletin, *Waste Fluorescent Lamp Management for Businesses and Institutions* previously published in 1996, ended on Jan. 31, 1999. The options allowed by the Universal Waste Rule make the guidance in this older version of the lamp bulletin obsolete. The Department requests individuals and businesses to recycle their copies of this bulletin and replace it with the current version dated 7/2003, entitled “*Fluorescent Lamps technical bulletin* (Mercury-containing lamps including fluorescent, neon, high-pressure sodium outdoor, high intensity, and metal halide lamps)”. The lamp bulletin for households and farmers is also being revised to include guidance for managing other universal wastes and will state that households and farmers also have the option of managing their wastes according to the provisions of the Universal Waste Rule if they wish.

What are the Basic Requirements for Managing Universal Wastes?

Anyone who wants to manage one or more of the universal wastes noted above under the Universal Waste Rule must determine his or her handler status. Large quantity handlers accumulate 5,000 kilograms (equivalent to 11,000 pounds) or more of universal waste (batteries, pesticides, mercury containing thermostats, switches, lamps, thermometers, and manometers, calculated collectively), at any time (approximately five to six tons), and small quantity handlers accumulate less than 11,000 pounds. The handler counts only those wastes that will be managed as universal wastes. All other hazardous wastes are calculated separately and determine the “hazardous waste generator status” of the business. The designation as a large quantity handler remains through the end of the calendar year in which the 11,000 pounds is accumulated.

Large and Small Quantity Handlers

- must not dispose of a universal waste into the environment.
- must not dilute or treat a universal waste or break or crush mercury containing lamps without a Missouri Resource Recovery Certification or permit.
- must follow the waste management requirements stated in the rule for the particular waste(s) being managed.
- small quantity handlers generating only universal wastes that they manage under this rule do not need to register or obtain an EPA identification number; large quantity handlers must register and obtain an EPA identification number if a number has not previously been obtained.
- must prevent releases to the environment.
- must label waste as a “universal waste” as described in the rule.
- may accumulate universal wastes on-site for up to one year.
- may accumulate universal wastes for more than one year for the sole purpose of facilitating proper recovery or disposal.
- may accept universal wastes from off site and keep them for up to one year (except for universal waste pesticides).
- must train employees on proper handling and emergency procedures.
- must respond to spills and manage the spill residue as hazardous waste.
- may self-transport the universal waste to an authorized destination facility or Missouri Certified Resource Recovery Facility (or for pesticides, to a Missouri Pesticide Collection Program). If self-transporting, the handler is required to meet universal waste transporter requirements in the rule.
- small quantity handlers need not keep records of universal wastes received or shipped; large quantity handlers have recordkeeping requirements.
- must comply with export requirements for foreign shipments if applicable.

Transporters

- must not dispose of universal waste into the environment.
- must not dilute or treat except to respond to spills.
- must comply with the requirements of the Universal Waste Rule for the particular waste being managed as well as U.S. Department of Transportation regulations in 49 CFR part 171 through 180 for all universal wastes being shipped that meet the definition of hazardous material in 49 CFR 171.8.
- are not required to use hazardous waste manifests (shipping papers or bills of lading are acceptable).
- may store universal waste at transfer facilities for up to 10 days.
- must respond to releases and spill residue must be managed as a hazardous waste.
- must only transport universal waste to a universal waste handler, Missouri Certified Resource Recovery Facility with authorization to accept the waste in question, destination facility or foreign destination. Pesticides must be taken to a universal waste pesticide collection program, to a destination facility, sent back to the registrant conducting the recall or to a Missouri Certified Resource Recovery facility with authorization to accept the waste in question.
- must comply with export requirements for foreign shipments if applicable.

Destination Facilities

- due to revisions in federal regulations which were effective in Missouri Nov. 30, 2001, all destination facilities, including Missouri certified resource recovery facilities, must have a Resource Conservation and Recovery Act permit for storage.
- must have an appropriate hazardous waste storage, treatment or disposal facility permit and

- comply with the terms of the permit for the management of universal waste received.
- must obtain and comply with the terms of a Missouri Certified Resource Recovery Facility authorization, if the destination facility recycles universal waste.
- must send waste off site only to another destination facility or a foreign destination.
- must keep records.

Who is affected by this rule?

Businesses

Universal wastes are generated by small and large businesses. In the past, businesses were required to manage universal wastes as hazardous waste. The Universal Waste Rule offers another option that eases the regulatory burden on businesses that generate these wastes by streamlining the administrative requirements. For example, certain small businesses that generate only universal wastes and manage them under this rule do not need to notify the state of their activities or pay hazardous waste fees and taxes on that waste. Further, the rule extends the amount of time that businesses can accumulate universal wastes on site to a year or more, as explained below. It also allows companies to transport the wastes with a common carrier (universal waste transporter), instead of a hazardous waste transporter, and it no longer requires companies to prepare a hazardous waste manifest (the transporter prepares a shipping paper).

In Missouri, this rule does not apply to any business that generates or accumulates less than 100 kilograms (220 pounds) of hazardous wastes per month or at any one time. Such generators are considered “conditionally exempt” from hazardous waste regulation. However, these small businesses are encouraged to participate voluntarily by using handlers and collection centers that legitimately recycle or dispose of their universal wastes. This rule will make it simpler for companies to establish collection programs and to participate in manufacturer take-back programs. Many large manufacturers and trade associations are already planning national and regional collection programs for their products.

Households

Households are not subject to hazardous waste management standards and are allowed to dispose of wastes covered under the universal waste rule with their trash. “Household waste” is defined in 40 CFR Part 261.4(b)(1). The department encourages residents to take their universal wastes to local collection centers or events when these are available for recycling or disposal.

Communities

Local communities can work with businesses and residents to encourage proper recycling or disposal of universal wastes. By easing the regulatory burden on businesses, more collection centers may become available. Communities can establish collection programs or help local businesses set up collection programs in their area based on the guidance in the rule.

How may I obtain copies of hazardous waste laws and regulations?

Copies of the Revised Statutes of Missouri are available through the Revisor of Statutes at (573) 526-1288, or are available online at www.moga.state.mo.us. Copies of the Missouri Code of State Regulations are available through the Missouri Secretary of State at (573) 751-4015, or are available online at www.sos.mo.gov. Federal regulations may be viewed at federal depository libraries, may be purchased from the U.S. Government Bookstore, the U.S. Government Printing Office, or from a commercial information service such as the Bureau of National Affairs. Federal Regulations are also available online at <http://www.access.gpo.gov/nara/cfr/index.html>.

For More Information

For more information on the Universal Waste Rule, please contact
Missouri Department of Natural Resources
Environmental Assistance Office
P.O. Box 176
Jefferson City, MO 65102-0176
1-800-361-4827 or (573) 526-6627
www.dnr.mo.gov/oac/env_assistance.htm

Hazardous Waste Program
P.O. Box 176
Jefferson City, MO 65102-0176
1-800-361-4827 or (573) 751-3176
www.dnr.mo.gov/alpd/hwp

APPENDIX K

MISSOURI MERCURY TASK FORCE GOALS AND OBJECTIVES

Missouri Mercury Task Force

Goals and Objectives

4/22/03

Mission Statement:

The Missouri Mercury Task Force is composed of representatives of governmental agencies working to reduce the potential harmful effects to citizens from mercury exposure and releases to the environment.

The task force seeks to better inform and educate the public about minimizing mercury exposure; promote the elimination of non-essential uses and safe retirement of mercury; and improve scientific understanding and environmental monitoring.

Goal 1 – Use and expand the body of scientific knowledge regarding the effects of mercury on the environment and human health.

Objective 1A - Compile and evaluate existing mercury monitoring data and use findings to improve the current data collection, comparison, and reporting.

- 1) Complete a study with recommendations for improving mercury monitoring to provide more consistent data and a greater understanding of the extent of the mercury contamination problem.
- 2) Coordinate sharing of research data among state and federal agencies.

Objective 1B – Increase knowledge of the relationship between fish consumption and human body burden

- 1) Complete biomonitoring project to determine correlation between fish consumption and body burden and whether adherence to fish advisories leads to lower levels of mercury in blood.
- 2) Disseminate findings to regulatory agencies, health departments, and the scientific community.

Objective 1C - Measure potential for mercury releases from buildings.

- 1) Complete a pilot study to identify sources of mercury and the potential for environmental release and human exposure in old and abandoned buildings.
- 2) Identify or develop and distribute best management practices for these sources.

Objective 1D - Measure potential for mercury releases from dental offices.

- 1) Monitor dental offices for mercury in drain traps and air.
- 2) Identify or develop and distribute best management practices for these sources.

Goal 2 – Educate the public on potential mercury dangers, sources of mercury, fish advisories, take-back programs, and safer alternatives.

Objective 2A – Create, maintain and publicize a Missouri mercury information clearinghouse website.

- 1) Compile information to be included.

- 2) Determine which agency will develop initial website.
- 3) Maintain and update website to add announcements and results of collections, new educational materials, workshop announcements, and other information.
- 4) Develop outreach plan for publicizing website.

Objective 2B - Develop and incorporate mercury instruction and educational materials for classroom use.

- 1) Develop teacher background sheet.
- 2) Promote college credit courses for teachers.
- 3) Publish article in *Missouri Resources* "Teachers Notebook."
- 4) Publish article in *Health Alert*.

Objective 2C – Publish mercury articles and issue press releases.

(e.g., *Missouri Conservationist*, University Extension news services, general interest newsletters)

Goal 3 – Reduce potential mercury exposures and releases to the environment.

Objective 3A - Participate in regional and national efforts to identify and eliminate non-essential applications of mercury.

Objective 3B – Promote industry-sponsored take back programs for mercury products (e.g., thermostats, batteries, lamps).

Objective 3C - Implement collection programs

Objective 3D - Participate in national discussions and the development of policies regarding mercury retirement.

Objective 3E - Participate in state and national discussions for the development of policies and regulations regarding the reduction of mercury emissions from combustion.

Goal 4: Engage stakeholders in identifying mercury problems and solutions.

Objective 4A – Identify stakeholders in current focus areas and activities.

Objective 4B – Target stakeholder organizations for outreach efforts, workshops, and program implementation.

Goal 5: Develop strategic recommendations to meet the goals and objectives of the Mercury Task Force (e.g., policies, regulations, and legislation)

Objective 5A – Prepare and disseminate report.

Objective 5B – Evaluate work to date, reassess goals and objectives.

Mercury Task Force

University of Missouri Extension

Marie Steinwachs

Missouri Department of Natural Resources

Georganne Bowman (WPCP), Bernard Thompson (DE), Bryan Hopkins (OAC/CEO), Joe Boland (ESP), Colleen Meredith (WPCP), Eric Sappington (ESP), Jim Penfold (OAC/EAO), John Madras (ALPD/ADMIN), June Sullens (OAC/EAO), Kathy Flippin (HWP), Marianne Britten (OAC/FASO), Omer Roberts (OAC/EAO), Rob Hargis (SWMP), Tom Judge (HWP)

Missouri Department of Agriculture

Don Yoest

United State Geological Survey

Christopher Schmitt
William Brumbaugh

Missouri Department of Health and Senior Services

Gale Carlson
Randy Maley
Todd Blanc
Aaron Winslow

Missouri Department of Conservation

James Low
Karen Bataille

APPENDIX L

THE STUDY OF WHITE GOODS RECYCLING AND DISPOSAL IN MISSOURI - INTRODUCTION AND SUMMARY

Excerpt from

**The Study of White Goods
Recycling and Disposal in Missouri**

**Prepared by:
The Midwest Assistance Program, Inc.
June 2003**



**Funding Provided by
The Missouri Department of Natural Resources**

The Study of White Goods Recycling and Disposal in Missouri

Introduction

White goods (major appliances such as refrigerators, washers, and dryers that are part of the ferrous scrap stream) were recycled at a very high rate throughout the 20th century. The Major Appliance Resource Management Alliance (MARMA) estimates that 60 million new appliances were sold in the U.S in 2000. During that year approximately 41 million appliances were discarded and about 35 million (85%) were recycled.

The State of Missouri had experienced similar recycling success. Missouri's major solid waste management legislation, known as Senate Bill 530, banned white goods from disposal in landfills because they were so easily recycled. The scrap value of major appliances was high enough to sustain a cottage industry of collectors. These collectors picked up and delivered white goods to scrap yards in both rural and urban locals earning a modest income for their work. However, over the past few years the recycling of white goods has become less and less profitable. In fact the disposal/recycling value of many appliances has gone from a positive to a negative value.

In 2001 the Missouri Department of Natural Resources issued a request for proposals to study the problems associated with the recycling of white goods through their Targeted Waste Reduction and Recycling Project funds. That grant was awarded to the Midwest Assistance Program in September 2002.

The purpose of this study is to identify the barriers to recycling white goods and suggest some remedies that could enhance recycling and reduce the illegal dumping of those items.

Preliminary Research

A preliminary investigation was conducted to define the problem stated above and gather information on the subject. An internet search was conducted to determine what research had been conducted and what problems, if any; other states were having with their white goods recycling. The Appliance Recycling Information Center has published a series of eight info bulletins that describe the state of appliance recycling nationally (Appendix 1). The Major Appliance Resource Management Alliance has also published a helpful report entitled "Appliance Recycling in North America – Infrastructure and Challenges" (Appendix 2).

The Center for Design at RMIT University has published a Product Stewardship Guide (Appendix 3) which was useful in contacting organizations interested in appliance recycling.

The Association of Home Appliance Manufacturers tracks trends and provides forecasts for major appliances. The industry shipments of major appliances (Appendix 4) provides detailed information on the number of major appliances shipped from 1991-2002.

Some states and individual communities have web pages that describe the appliance recycling process and/or direct consumers on how to recycle their major appliances. An internet search of surrounding states (Appendix 5) provided information regarding how our neighbors are approaching the problem of appliance recycling.

The regulatory agencies in all neighboring states as well as several others were contacted to determine if they were experiencing problems with reduced recycling and increased illegal dumping of white goods. Each agency contacted expressed concern over the recent problems encountered with the recycling of major appliances but none had any solutions to the dilemma.

Several stakeholders (individuals or businesses directly affected by the recycling or disposal of white goods) were identified and interviewed about the problem. Most indicated that the cost to prepare appliances for recycling was becoming very labor intensive and the prices paid for scrap metal had dropped.

The price history of scrap metal was obtained through *Recycling Today*. The average price of number one heavy melting scrap and an analysis of the recycling metals markets by the U.S Geological Survey are included in Appendix 6.

Survey of Stakeholders

A questionnaire was created based on the preliminary research conducted. The questionnaire was sent to 1707 stakeholders. The distribution and response rate are listed in the table below:

Stakeholder Group	Sent	Returned	Percent
Counties and Municipalities	578	73	12.6%
Major Appliance Repairers	330	16	4.8%
Major Appliance Dealers	305	22	7.2%
Solid Waste Industry	303	30	10.1%
Scrap Metal Dealers	116	7	6.0%
Recycling Centers	75	11	14.7%
TOTAL	1707	159	9.3%

The questionnaire was combined with some brief instructions and a list of meetings scheduled to discuss the results of the survey (Appendix 7). The questionnaire asked three basic questions:

1. What appliances are the most difficult to recycle?
2. What are the barriers to recycling white goods?
3. What are the solutions to overcoming those barriers?

Respondents were told to mark all answers that were applicable. The results for these survey questions were broken down by each group (Appendix 8). The overall sentiment from the stakeholders responding to the survey was:

Problem items: Appliances containing CFC's (refrigerators, freezers, air conditioners) ranked the highest. The obvious problem with these items was the removal of refrigerant from the appliance. On July 14, 1992, EPA published a final rule in the federal register, pursuant to section 609 of the Clean Air Act (Appendix 9). This rule requires the proper evacuation of refrigerant from all refrigeration appliances prior to their disposal or recycling. The rule became effective on January 29, 1998. The fine for non-compliance to this rule has been set at \$10,000 per violation and is vigorously enforced by EPA.

Barriers: The greatest barrier in recycling white goods was the low price (45% of respondents) offered by the scrap yards for the appliances. National pricing for #1 heavy melting scrap (Appendix 6) indicates a cyclical price trend. The average national price from January 2000 until December 2001 fell from \$121 per ton to \$65 per ton. However since that time prices have increased to \$115.91 per ton as of February 2003. According to most small scrap haulers the increase in prices has not been passed on to them.

The second greatest concern about barriers to recycling was the inability to find a contractor (43%) to pick up white goods, removing refrigerant was too labor intensive (43%) and customers not willing to pay an extra fee to have their old appliance hauled away (41%).

Solutions: The most mentioned solution was a directory that listed scrap yards, haulers, and certified extractors (62% of respondents). Other solutions that were most mentioned were, better enforcement of illegal dumping (38%), grants to pay for refrigerant extraction equipment (35%), and more buyers for recovered refrigerant (35%).

Statewide Focus Groups

The survey results were presented to ten focus groups held throughout the state between November 5, 2002 and November 22, 2002. Detailed notes from each of those groups are included in the appendix (Appendix 10). Each of the stakeholder groups were represented during these meetings. Each meeting lasted approximately 90 minutes and included valuable discussions of the barriers to, and solution for, more efficient recycling of white goods. A total of 83 persons attended the focus groups

Barriers: All groups were in agreement on the main barrier to recycling. A combination of lower prices for scrap, fear of regulators and fines for non compliance, and an increase in labor to make appliances acceptable for scrapping had driven most “scrappers” out of the industry. Focus group attendees cited the following reasons for each of the above barriers:

Lower Scrap Prices – During the 90’s large volumes of “cheap” foreign steel was imported from abroad. This problem was partially corrected in 2001 due to import restrictions on foreign steel. The reduced value of this “cheap” steel caused several steel mills to close. One of those steel mills was located in Kansas City. The closing of that mill caused the local scrap shredder (Galamet) to transport their shredded scrap to mills hundreds of miles away. This added expense caused lower prices paid for scrap in Western and Central Missouri.

Added Regulations – The Federal regulations requiring the removal of refrigerant by certified personnel became effective on January 29, 1988. EPA began to enforce this rule soon thereafter. The announced fine for any violation (improper evacuation of any appliance containing refrigerant) is \$10,000. Many of the “scrappers” that picked up white goods in small trucks decided to get out of the business instead of complying with the new regulations. This seemed to be true more in rural areas than in the metropolitan areas.

Many scrap yards now require signed affidavits from haulers bring in white goods (Appendix 11). These affidavits are necessary to protect the scrap yard from liability. However, along with lower prices for the scrap metal, it does decrease the number of individuals or companies that will pick up and haul white goods.

More labor intensive – In addition to removing the refrigerant from appliances, there are often other steps needed to prepare an appliance for recycling. Many scrap yards now require that all motors and compressors be removed from all appliances, both refrigeration and non refrigeration units. The reason for this is more economic than environmental. If motors and compressors are removed the scrap yards can increase profit margins by recycling the motors separately thus increasing profitability. Removal of other items may be required also. Some older units have capacitors with PCB’s that must be removed and disposed, draining and the disposal of oil, and the removal of mercury switches on some units.

In general the focus groups felt that lower prices, more regulation, and increased labor to prepare appliances for recycling have had a decisive economic affect on the industry. Throughout the last century white goods had a positive economic disposal value. There was a small group of independent entrepreneurs that could make a meager living out of collecting appliances, possibly repairing some, and taking the remainder to the scrap yard for enough revenue to cover expenses. However, during the past three years the labor and expenses have increased, the revenue has decreased, and the threat of non-compliance has resulted in a negative value for appliances.

This transition from a waste item that had value, to a waste item that is now a liability is the key to the problem. Most citizens still look at white goods as a waste item that is valuable for its scrap value. The reality now is that the old appliance is a liability and like most other waste items, will require a fee to cover transportation and preparation for the scrapping process. The focus groups agreed that the barriers are basically economic and educational.

Solutions: Each focus group had a variety of solutions they felt would increase the recycling of white goods. Summarizing and combining suggestions from all the groups resulted in 14 potential recommendations. These fell into three broad categories.

1. Information and educational assistance
2. Assistance with regulatory issues
3. Economic incentives

The fourteen potential recommendations were discussed with the Missouri DNR staff, industry groups and Solid Waste Management District Planners. The potential recommendations were mailed to all 1701 stakeholders that had received the original survey. The stakeholders were asked to review the potential recommendations and comment on their viability.

Prioritizing the Recommendations:

Another set of statewide meetings were scheduled for April 1, 2003 through April 17, 2003 (Appendix 12). At each meeting attendees were given a handout (Appendix 13) with the fourteen potential recommendations from the earlier meeting along with a ballot to vote for what they felt would be the most effective solutions for better recycling of white goods. A more detailed description of each of the fourteen potential recommendations from the first set of meetings will be provided later in the report. The following is a list of those recommendations in the order that they were presented to each focus group:

1. Combine Appliances and Electronics.
2. Encourage District Collection Programs.
3. License Appliance Haulers
4. Encourage Reuse and Repair
5. Encourage Better End Markets for Scrap Metal
6. Provide Better Information on White Goods Recycling
7. Provide Consumers with Appliance Recycling Information
8. Provide Grants for Extraction Certification and/or Equipment
9. Create a Fee System to Subsidize Recycling and/or Pay for Illegal Dump Clean-ups.
10. Enforcing the Illegal Dumping of Major Appliances
11. Removing the Disposal Ban on White Goods
12. Provide Incentives to Landfills for the Separation and Recycling White Goods
13. Require Manufacturers to Design Appliances for Easier Recycling
14. Assist Small Businesses that Want to Collect White Goods by Streamlining the Regulatory Process.

During the meetings each potential recommendation was discussed with pros and cons listed on a PowerPoint presentation (Appendix 13). At the end of each meeting the attendees were given a ballot (Appendix 13) and asked to “vote” for the recommendations they felt would be most effective tools to increase recycling and discourage the illegal dumping of white goods. The attendees were also told to “vote” for the recommendations that would be least helpful.

A total of 80 persons attended the focus groups. Four attendees chose not to complete the ballot. Seventy six ballots were completed. The ballots were totaled and entered on an Excel spreadsheet (Appendix 14). There were some obvious differences between the metropolitan (St. Louis and Kansas City), mid sized Cities (Columbia and Springfield) and the 6 rural meeting locations.

The priorities based on geographical breakdown were:

Metropolitan areas - St. Louis and Kansas City

1. Provide Better Information on White Goods Recycling
2. Assist Small Businesses that Want to Collect White Goods by Streamlining the Regulatory Process.
3. Provide Consumers with Appliance Recycling Information

Mid Sized Cities – Columbia and Springfield

1. Encourage District Collection Programs.
2. Provide Better Information on White Goods Recycling
3. Provide Grants for Extraction Certification and/or Equipment

Rural Areas

1. Encourage District Collection Programs.
2. Provide Better Information on White Goods Recycling
3. Provide Consumers with Appliance Recycling Information

Both metropolitan areas have a collection system in place and a private company that processes the white goods for shipment. In Kansas City, Scientific Recycling Inc. accepts appliances from the City of Kansas City Missouri. In the St. Louis metropolitan area, Appliance Recyclers, Inc. picks up white goods and bills the resident or the City direct for that service.

Outside of the two metropolitan areas there have been problems finding companies or individuals to pick up white goods, process them sufficiently for recycling, and deliver those appliances to a scrap metal yard. For the past two years Solid Waste Management District’s B, C, and D have hosted one day collection programs for their municipalities. However, both Districts are reporting difficulty in finding a contractor to pickup, process, and haul the white goods collected at these events. Solid Waste Management District Q collects white goods on an ongoing basis and prepares them for recycling before delivering them to the local scrap yard.

Recommendations from the Focus Group Meetings

The following recommendations were made by the first set of focus group meetings in November 2002 and prioritized by the by the second set of focus group meetings in April 2003. **The recommendations are listed in the priority order voted by the groups.** The number in parenthesis after the recommendation are the points (either positive or negative) received during the focus group voting. The PROS and CONS were presented to each group and discussed before the voting.

1. Provide Better Information on White Goods Recycling (47 points)

PRO'S

- This was the number one choice from the surveys and focus groups.
- “Knowledge is Power”.
- A Target grant could be used to create and maintain a database of haulers, scrap metal buyers, and certified extractors.

CON'S

- Information must be accurate.
- Information might get old and out of date.
- Just having the information will not correct the problem.

An information and education program targeted to both the public and private sectors could be helpful. A majority of respondents (62%) on the survey and virtually all of the attendees at the meetings felt that more information was needed on appliance recycling. Everyone thought an online directory of scrap yards, refrigerant recoverers, regulations, and environmental concerns was a good idea. The information could cover:

- Why proper recycling of major appliances is necessary
- Problems resulting from the illegal dumping of appliances.
- State and federal regulations concerning the extraction of refrigerant as well as the removal of motors, compressors, oil, and capacitors.
- State and local regulations on site restrictions and zoning jurisdictions
- A list of local contractors that will remove refrigerants and other parts.
- A list of scrap yards that will buy appliances.
- A list of contractors that will pick up and transport appliances.
- A list of Solid Waste Management District and DNR personnel that can assist with appliance recycling.

2. Encourage District Collection Programs (37 points)

PRO'S

- It would be more cost effective to collect white goods on a larger scale.
- Targets grants could be created to fund the District collections.
- Districts could combine collections for white goods with other problem items.

CON'S

- Districts would have to be more proactive in dealing with the problem.
- Some Counties and Municipalities have programs in place now.
- More responsibility for District Planners.

Scrap prices could be maximized and the cost to evacuate refrigerant could be lowered if all communities in each of the solid waste management regions would pool their resources and work cooperatively to stage and prepare appliances for recycling in one area. Region B, C, and D currently provide one-day appliance clean-ups for communities in their regions. Region B is also certified to remove refrigerant. Region Q collects white goods from their communities and processes them at their MRF.

DNR could encourage this regional approach by:

- Providing technical support on regulations, operational efficiencies, and markets for scrap metal
- Providing targeted grants for the solid waste management districts to subsidize personnel and/or transportation costs.
- Negotiating a state contract for higher scrap prices.

3. Provide Consumers with Appliance Recycling Information (35 points)

PRO'S

- Informed consumers will make better disposal choices.
- An opportunity to educate the public on solid waste issues.
- This may help retailers take more units in on trade and reduce illegal dumping.

CON'S

- Just having the information will not correct the problem.
- Distributing the brochures to retailers and keeping them in stock would be a problem.
- More paper.

Most attendees thought consumer education and awareness of why appliance recycling is important, and how to recycle their unwanted appliances should be a key component of any recycling plan. The consumer could be educated about the difficulty in recycling appliances and urged to trade their old appliance in when purchasing a new one.

A brochure could be created and distributed to appliance dealers to make consumers aware of the importance of proper appliance handling and recycling. This brochure could be given to customers shopping for new appliances.

4. Provide Grants for Extraction Certification and/or Equipment (29 points)

PRO'S

- Grants could help more people get into the business and increase competition.

CON'S

- Providing grants could not insure that the service would be provided better or more economical.

Target grants could be provided to assist with refrigerant removal Certification and removal equipment. DNR could consider sponsoring classes that teach how to recycle white goods with certification as an end product. Grants for extraction equipment could be given to those that complete the classes.

5. Create a Fee System to Subsidize Recycling and/or Pay for Illegal Dump Clean-ups (25 points).

PRO'S

- An advanced fee could be used to subsidize recycling or clean up illegal dump sites without using existing solid waste funds.
- A \$3 dollar fee per appliance would create about 3.3 million dollars per year.
- This could be also be implemented for electronic items.

CON'S

- A fee will be perceived as another tax by consumers.
- Retailers near state borders will be disadvantaged.
- All Fees must be approved by the Legislature.

A small percentage (19%) of those responding to the survey felt that a voluntary trade-in fee was needed. A larger percentage (28%) wanted a mandatory fee that would be collected on the sale of new appliances. Most attendees at the meetings like the fee idea but there were divergent opinions on how to structure such a fee. Two states currently assess an advance disposal fee. These are:

- N. Carolina collects \$3 for appliances sold at retail outlets (North Carolina has about 3.2 million households and collected \$4,522,528 total in FY 01-02). A report for FY 01-02 is included as Appendix 15.
- S. Carolina collects \$2 for each major appliance which is paid by wholesalers.

Based on the number of Missouri households (2.2 million) and the life cycle of each appliance, between 1.1 and 1.5 million major appliances are sold in Missouri each year.

6. Encourage Better End Markets for Scrap Metal (22 points).

PRO'S

- Local markets would reduce transportation costs.
- Local markets might pay higher prices for scrap.
- Market driven approaches are better than subsidy or enforcement programs

CON'S

- Shredders and Steel mills will be difficult to recruit because they require huge financial investments.
- Steel mills must locate close to Ports for international markets.

There are no end markets (mills or foundries) for ferrous scrap in Missouri. All scrap must be transported to mills in other states or to seaports for shipment abroad. The trend in ferrous scrap seems to be more exporting. The United States is still the top producer of steel and also the leading exporter of ferrous scrap. China is the leading importer of ferrous scrap. A small steel mill, particularly in the Kansas City area, could lower transportation costs and raise the prices paid for scrap.

All agreed that a market-driven solution was better than a government induced subsidy program. Several attendees suggested tax credits for the scrap dealers in order to prop up prices and encourage recycling. Any tax changes would need to come from the legislature and that may be difficult during our present economic shortfall.

7. Assist Small Businesses that Want to Collect White Goods by Streamlining the Regulatory Process (19 points).

PRO'S

- DNR could provide assistance with permits and regulations that would encourage more collections.
- The Environmental Assistance Office (EOA) could be the “Gatekeeper” that would reduce fear of regulatory agencies.

CON'S

- Regulations that frighten potential collectors would still exist.
- “I’m from the government and I’m here to help”?
- Regulations from Federal agencies like EPA and state agencies like MDOT would be difficult to coordinate.

The small business ventures that once collected white goods for scrap have nearly vanished because they do not understand the regulations, or fear the regulators. DNR’s Environmental Assistance Office (EAO) could provide assistance to these small businesses in understanding and complying with regulations. The regulations come from a variety of federal and state agencies.

8. Encourage Reuse and Repair (12 points).

PRO'S

- Reuse could be encouraged by the Districts by offering grants to subsidize the removal of non-repairable appliances.
- Information on where to take appliances for repair might be cost-effective.
- Getting repair shops involved with the Solid Waste Management District’s would be helpful.

CON'S

- The repair industry does not need any help from DNR or the Districts.

Reuse could be explored. District solid waste funds could be targeted to small neighborhood centers that repair used appliances. The funding could be used to subsidize the recycling of appliances that could not be repaired.

9. Enforcing the Illegal Dumping of Major Appliances (-4 points)

PRO'S

- This received the second highest response on the survey.
- Higher fines and possible jail time might change illegal dumping behavior.
- Better enforcement of zoning or nuisance ordinances might reduce “eyesores”.

CON'S

- Law enforcement is not enthusiastic about catching illegal dumpers.
- Illegal dumping is difficult to prosecute.
- All of the focus groups felt enforcement was necessary but not the best solution.

Enforcing illegal dumping with significant fines or jail time was suggested several times in the survey. However it is very difficult to get law enforcement enthusiastic about catching and prosecuting illegal dumpers. Most attendees felt that enforcement of illegal dumping was not a realistic solution to better recycling and could probably move down the priority list. Everyone agreed that incentives are better than enforcement. Occasionally appliances are collected with the intent of recycling but actually become unsightly illegal dumps. Scrap metal yards are strictly regulated by the state but “accumulators” are not and zoning sometimes let them get away with storing metal in ways that is harmful to the environment and aesthetically not pleasing. Local zoning laws could be enforced to require better management of appliances.

10. Provide Incentives to Landfills for the Separation and Recycling White Goods (-18 points)

PRO'S

- Removing surcharge would reduce costs.
- Landfills and transfer stations have the resources and equipment to handle white goods.

CON'S

- Landfills and transfer stations may not want to handle white goods.
- White goods would still need to be separated before transport.

Landfills and transfer stations could be given the responsibility for separating and recycling appliances and electronic items. The rules on imposing the state surcharge could be changed to exempt white goods. Several states have similar rules concerning white goods recycling. Nineteen states require landfills to separate white goods for recycling. Three states give landfills the option of recycling or disposing of white goods. Four states require local plans to deal with disposal.

11. Require Manufacturers to Design Appliances for Easier Recycling (-28 points).

PRO'S

- Better design would reduce labor costs to prepare units for recycling.

CON'S

- The reality of getting manufacturers to design better is not high.

Manufacturers could be brought into the process. Major appliances could be designed for recycling with easy disconnects for copper parts and refrigerant. This would reduce the labor needed to get many white goods acceptable for recycling.

This is a product stewardship issue and is similar to the initiatives that are being pursued with electronics manufacturers. The problem is national in scope and the State of Missouri, operating by itself, would have little leverage in requiring design changes.

12. Combine Appliances and Electronics (-41 points).

PRO'S

- Would allow more flexibility in collection and grant request funding.
- Illegal dumping problems are similar.
- A broader audience and easier to educate consumers if both are combined.

CON'S

- Items are too different to be grouped together.
- They go to different markets for recycling.
- Electronics may contain hazardous waste.
- Simply grouping the two together will not solve the problem.

White goods and electronics could be linked together and any solution could involve both types of materials. They are similar and disposal or illegal dumping is a problem for each. Most attendees felt that any solution for white goods could also be adaptable for electronics and office machines. At the present time white goods are banned from landfills but most electronic items are not. White goods and electronics could be collected and recycled under the same target grants.

13. License Appliance Haulers (-44 points).

PRO'S

- This might help in the enforcement of illegal dumping.

CON'S

- This might add a cost factor to collecting white goods.
- More bureaucracy

The state could license appliance haulers and require certification before hauling. Licensing could be similar to that of waste tire haulers. This will require additional regulatory oversight by DNR and enforcement by local law enforcement officers. This may, or may not decrease the amount of illegal dumping.

14. Removing the Disposal Ban on White Goods (-53 points).

PRO'S

- If white goods are not valuable for their metal content they should be allowed in landfills.
- There would not be a problem if the ban was lifted.
- The ban on microwaves was lifted in 2002.

CON'S

- Lifting the ban would send the wrong message.
- Metal recycling will experience price fluctuations in the future but there will always be a value in scrap metal.
- Landfill space is still a valuable commodity in Missouri.

Senate Bill 530 banned all white goods from landfills in 1990. Currently 18 states have similar bans in place. In 2002 an amendment on an unrelated bill was passed which exempted microwave ovens from the white goods ban.

There was virtually no support in the meetings for eliminating the current ban on all white goods. There was some discussion on removing dishwashers from the banned list because newer models have a lower metal content. However, the overwhelming thought from most attendees was to keep the ban on all white goods intact.

Summary of Findings

The amount of recycling and/or illegal dumping of white goods is difficult to calculate. Based on information from surveys and focus meetings, recycling has become much more difficult and illegal dumping is more widespread during the past few years. What is measurable is the cost to prepare major appliances for recycling and their scrap value.

Historically white goods had a positive scrap value. There were several small independents (scrappers) that would pick up appliances at retail stores, repair shops, and residences at no cost and take them to a local scrap yard. Labor and overhead costs were low and scrap prices paid enough to eek out a living. However, during the past two years many of these independent contractors have gotten out of the business. There seems to be three main reasons for this turn of events:

1. **Lower Scrap Prices** – During the 90's large volumes of "cheap" foreign steel was imported from abroad. This problem was partially corrected in 2001 due to import restrictions on foreign steel. The reduced value of caused several steel mills to close. One of those steel mills was located in Kansas City. The closing of that mill caused the local scrap shredder (Galamet) to transport their scrap to mills hundreds of miles away. This added expense caused lower prices paid for scrap in Western and Central Missouri.
2. **Added Regulations** – The Federal regulations requiring the removal of refrigerant by certified personnel became effective on January 29, 1988. EPA began to enforce this rule soon thereafter. The announced fine for any violation (improper evacuation of any appliance containing refrigerant) is \$10,000. Many of the "scrappers" that picked up white goods in small trucks decided to get out of the business instead of complying with the new regulations. This seemed to be true more in rural areas than in the metropolitan areas. Many scrap yards now require signed affidavits from haulers bring in white goods (Appendix 11). These affidavits are necessary to protect the scrap yard from liability. However, along with lower prices for the scrap metal, it does decrease the number of individuals or companies that will pick up and haul white goods.

3. **More Labor Intensive** – In addition to removing the refrigerant from appliances, there are often other steps needed to prepare an appliance for recycling. Many scrap yards now require that all motors and compressors be removed from all appliances, both refrigeration and non refrigeration units. The reason for this is more economic than environmental. If motors and compressors are removed the scrap yards can increase profit margins by recycling the motors separately thus increasing profitability. Removal of other items may be required also. Some older units have capacitors with PCB's and some units are equipped with mercury switches.

The end result has been a transition from a positive value where white goods were a financial asset to a negative value where white goods are a financial liability.

Urban areas (Kansas City and St. Louis) have experienced price increases from vendors that collect and/or process white goods. The City of Kansas City delivers their white goods to Scientific Recycling and pays \$17 per appliance. Other municipalities in the Kansas City area are struggling to find contractors that will collect and process the items. The St. Louis region utilizes Appliance Recyclers in Illinois to collect and process white goods. The price to collect is billed to the municipality or private waste company and the fee varies. In most cases these costs are passed on to the customer.

Rural areas have also seen an increase in the cost to recycle white goods. The City of Cape Girardeau pays a contractor \$35 per unit to remove and dispose of refrigeration units. Solid Waste Management Districts that have contracted for one day collection events have seen large increases in the cost to remove and recycle white goods. In fact several Districts have found it difficult to find a contractor to provide this service.

The bottom line is that recycling white goods is more costly now than in the past. In fact,

In most instances it costs more to recycle appliances than the value received from scrapping them.

Conclusion

It is very unlikely that the Department of Natural Resources can do anything to reverse the trend in white goods recycling and create a system that provides a positive scrap value for appliances. Possible solutions that may ease the cost of recycling are:

Information: Most attendees at the focus meetings did not know what was required to get white goods prepared for scrap or who to call for that service. Municipalities, appliance dealers, and the solid waste industry need

an easy to use directory of regulations that pertain to the recycling and disposal of white goods, contractors that will collect and process white goods, and scrap yards that will accept white goods. Private Citizens also need this type of information when they want to discard their old appliances and in most cases they call their municipality or private solid waste hauler for directions.

A hard copy directory is needed by municipal staffs and the solid waste industry for quick reference when they receive calls from residents or customers. However, the information is so fluid a digital database linked to the DNR web site is probably more realistic. This database must be up-to-date and user friendly.

Education: Consumers should be educated about the increasing cost of disposal for old appliances. Most consumers are unaware of the problems associated with the proper disposal of their used appliances. The change from a positive value for these items to a negative value has happened so quickly that many consumers that purchase new appliances are not aware that disposal of that old appliance may cost them more than they anticipated. When consumers find out how costly and difficult it is to dispose of the old appliance they frequently dump them illegally to avoid that cost.

An educational campaign directed at consumers of new appliances should reduce that illegal dumping and justify trade in fees charged by appliance dealers to recycle those units. Some aspects of that educational campaign might be brochures at retail appliance dealers, PSA's, and information on the DNR web site.

Efficient Collection and Processing: Rural municipalities and residents have more difficulty finding contractors to collect and process white goods for recycling. These areas are experiencing high costs and high illegal dumping rates due to the lack of certified contractors that are willing to evacuate refrigerant and process appliances. More certification classes and grants to purchase equipment could lower costs in some rural areas and provide more choices for that service.

A government entity (preferably the Solid Waste Management Districts) could provide an accumulation point where appliances could be processed

and sold for scrap. This accumulation would provide some economy of scale and lower the per-unit cost in rural areas. These accumulations could also be a source for appliances that are still usable and promote repair and reuse of these appliances. In most cases the Solid Waste Management Districts do not have sufficient funds to take on this added burden. Therefore additional funding from the Solid Waste Management Fund would be needed to assist these collections.

More Revenue to Subsidize Recycling: The values of White goods have quickly gone from an asset to a liability. Unless the consumers or government entity want to assume the direct cost for recycling, a subsidy will be required. At the current time the only source of funds for this purpose is the Solid Waste Management Fund. This fund collects approximately two dollars on each ton of waste disposed or transferred in Missouri. Most of this fund is distributed to Solid Waste Management Districts and used to subsidize waste reduction, reuse, recycling, and educational activities. The remainder of the fund is used for state-wide target grants, the Market Development Program, and DNR Administration.

Additional funds could be generated through an advanced disposal fee on new appliances. The State of North Carolina has such a fee in place and has used the funds to subsidize white good recycling and the clean-up of illegal appliance dumps. A three dollar advanced disposal fee (similar to the North Carolina program) on each new major appliance sold in Missouri would generate approximately three million dollars per year. These funds could be used to subsidize appliance recycling or assist in the clean up of illegal dumps containing white goods.

Encourage Better End Markets for Scrap Metal: The price paid for scrap at the local scrap metal yards has dramatically fallen since 2000. Although the national price for metal has risen the local prices remain depressed. This is due in part because of higher transportation costs to shredders and steel mills. The number of steel mills has steadily decreased over the past decade because of the availability of “cheap foreign steel”. When the steel mill in Kansas City closed the scrap for steel at local scrap yards declined drastically. There are also only two major shredders (the step between local scrap yards and the steel mill) in Missouri.

The State of Missouri could attempt to recruit more steel mills or scrap shredders to locate in Missouri. The Missouri Market Development Program receives 10% of the total money collected from the Solid Waste Management Fund (about \$1 million per year) but has not funded a metal recycling project in ten years. Given the high capital costs involved in building these facilities, it is doubtful that the Market Development Program would have enough grant money to lure a steel mill to Missouri. A shredding operation in Rural Missouri would most likely raise scrap prices locally but the amount of scrap needed to fuel such an operation is probably too low.

The best alternative to building better end markets is to support The Institute of Scrap Recycling (ISRI) and the Steel Recycling Institute's lobbying effort to reduce imported steel.

Assist with Regulatory Compliance: Many small independent scrap haulers have gone out of business because they do not understand the new regulations governing the handling of scrap. There are several concerns including, the improper evacuation of refrigerant (EPA), illegal disposal of oil or capacitors containing PCB's (DNR), or the improper transportation of scrap (DOT). Many small entrepreneurs are overwhelmed with the regulatory barriers and therefore get out of the scrap hauling business or operate illegally.

The Department of Natural Resource's Environmental Assistance Office (EOA) could provide assistance to individuals or small businesses that want to collect, process, and haul white goods. The assistance could be in the form of refrigerant extraction certification, assistance with necessary permits, writing a business plan, assistance with grant writing for equipment, and/or the creation and update of the directory mentioned previously.

In Conclusion, the barriers to white goods recycling are economic. Consumers, the solid waste industry, and the appliance industry are facing costs to recycle (dispose) old appliances that did not exist five years ago. The question for Government is:

- How much of that cost should remain with consumers and business?
- How much could be reduced through good information and educational efforts?
- How much should be subsidized by government programs?

APPENDIX M

WASTE TIRE ADVISORY COUNCIL RECOMMENDATIONS

Waste Tire Advisory Council Recommendations

The Waste Tire Advisory Council has worked with the department to identify unmet and unfunded needs in the interest of furthering the success of the waste tire efforts.

- The Waste Tire Fee expires on Jan. 1, 2004 in the existing statute. The Waste Tire Advisory Council reached consensus that the existing fee should be extended seven to 10 years.
- The Waste Tire Advisory Council recommends future legislation provide the department more flexibility with the funding. This flexibility could be accomplished by changing the allocation percentages stated in the existing statute.
- The Waste Tire Advisory Council recommends all waste tire work be paid for with funding from the Scrap Tire Subaccount of the Solid Waste Management Fund. Even after reducing waste tire staff by one full time equivalent position in 1997, the department currently subsidizes waste tire work with funding from the Solid Waste Management Fund.
- Increase funding flexibility in upcoming legislation.
- Enhance established controls for permitting, enforcement and inspections. Enforcement is considered the most important aspect of existing controls.
- Address the waste tires that are not accounted for through the existing infrastructure. Currently, about five percent of the waste tires generated cannot be accounted for within the system.
- Increase collection center inspections. Currently, the program is able to inspect about 20 percent of the existing retailers annually.
- Enhance tracking system. The system for tracking waste tires “from cradle to grave” is cumbersome and time intensive. The Solid Waste Management Program is automating the system.
- Augment market development via the Waste Tire Grant Program. The current statute limits funding for grants to five percent of the revenues collected, currently \$85,000 to \$100,00 per year. This limitation virtually eliminates meaningful market development.
- Improve coordination with Missouri Department of Transportation, Missouri Department of Corrections, Division of State Parks, Environmental Improvement and Energy Resource Authority and industry to introduce more waste tire-derived materials in their projects.
- Promote the use of rubberized asphalt with state and local agencies and paving contractors.
- Support the use of waste tires in civil engineering applications. Promote projects using waste tire material in highway construction such as lightweight fill and drainage. Promote landfill projects using waste tire material as a liner protection layer, in leachate and methane gas collection systems, and as a drainage layer under final cover.
- Sustain the appropriate use of tire-derived fuel. This is currently the largest end use-market of waste tire material.
- Advance the markets for crumb rubber. Promote the use of crumb rubber as a raw material in the manufacture of new products.
- Expand education efforts.
- Assist local governments with waste tire control efforts and illegal dump cleanups.

APPENDIX N

FINAL REPORT OF THE SOLID WASTE LAW ADVISORY GROUP

Final Report

Solid Waste Law Advisory Group

December 18, 2003

This report summarizes the work of approximately thirty stakeholders, representing solid waste industry, solid waste management districts, cities, counties, recycling businesses and non-profit groups. The primary objective is to put on paper the group's output from meetings held September 23-24 and October 8, 2003. A draft report of the September 23-24 meeting was sent to stakeholders on September 30 and a draft report of the October 8 meeting was sent November 4, 2003. The Department of Natural Resources received no comments to either draft report.

I. September 23-24, 2003 Meeting

Dr. Jerry Wade facilitated the meeting with the assistance of Alice Geller (DNR).

Matrix of Solid Waste Activities

Advisory group members were provided with an "actions" matrix prior to the meeting. The matrix was created from two main components:




1. A list of actions based on the work of five stakeholder groups for input to a statewide solid waste management plan. The five groups looked at several categories of solid waste: residential, institutional, commercial, industrial, and construction/demolition. They identified actions which they thought would be needed to meet the goals and objectives of a solid waste plan.
2. A list of actions not identified by the state plan stakeholders, but currently being conducted to carry out the duties and responsibilities in the Missouri Solid Waste Law.

The actions were placed into four main categories for the state plan, reflected in the matrix: Education for All, Waste as a Resource, Safe Disposal practices and Special Waste Issues.

Participants were organized into nine groups. Each group was asked to indicate for each action whether they viewed it as essential, important, or not necessary. These choices were tallied and a revised version of the matrix created (see enclosed). The revised version is sorted by the "Essential" and "Important" columns. This process helped to evaluate the activities as a framework for discussing the funding issue.

General Tonnage Fee Discussion

After the ranking activity workgroup members were polled to judge their overall support for increasing the tonnage fee, keeping it the same, or decreasing the fee. For each proposal, stakeholders were to indicate if they support (thumb up), could live with (thumb horizontal) or opposed (thumb down). The poll indicated that it was nearly equal for those who support or could live with a fee increase as opposed to keeping the fee the same. This seemed to indicate that there would be no consensus on changing the tipping fee.

	Thumbs Up (in favor of) 	Thumbs horizontal (can live with it) 	Thumbs Down (against) 
Increase the tonnage fee	8	9	11
Decrease the tonnage fee	1	2	24
Keep the tonnage fee “as is”	13	9	4

Stakeholders also provided pro and con statements to explain their vote.

	PRO	CON
Increase the tonnage fee	<ul style="list-style-type: none"> • May be able to fund the budget deficit • More money available to districts • More revenue (2) • Continue funding • Make alternatives (to disposal) more viable • Minimum impact on customer base if modest increase 	<ul style="list-style-type: none"> • Increased direct exports (2) • Increased consumer costs (3) • Increased illegal dumping (3) • Practicality of doing (2) • Must open law (3): funds could be diverted to others; budget battle likely • Look at other revenue sources, including GR (general revenue)
Decrease the tonnage fee	<ul style="list-style-type: none"> • Decrease illegal dumping • Decrease customer costs • More waste kept in state, therefore increase in revenue • Not an option (given twice) • Lower cost to hauler, not to consumer (given twice) 	<ul style="list-style-type: none"> • Less money for solid waste management plan implementation (4) • Doesn't solve problem • Strain Missouri landfills (2) • Fee accepted – no issue
Keep the tonnage fee “as is”	<ul style="list-style-type: none"> • Will not need to open law • Wouldn't need to be here • Baseline proved • Economic stability 	<ul style="list-style-type: none"> • Cuts continue • \$1.3 million shortfall (2) • Reduce ability to cover costs (2) • Doesn't solve problem

Principles for Distribution of the Solid Waste Fund

The stakeholders were asked to come up with the principles they would use to direct their decision regarding the distribution of the fund. After some discussion, the following key principles were given.

- Ensure adequate funding to ensure primacy
- Fund essential services but evaluate what they are
- Keep in place core DNR programming
- Are there duplication of efforts? Is the function required? or done elsewhere?
- Distribution between districts equitable

- More decentralization of evaluation and funding of target grant projects
- Determine the most effective means to achieve programming goals and objectives
- Are grant programs necessary?
- State Vs Local: essential services; equity in distribution
- Districts accomplish essential tasks
- Increase legislative understanding of DNR & solid waste needs, programs statewide

II. October 8, 2003 Meeting

On October 8, 2003, stakeholders met to continue discussions regarding statewide solid waste activities in Missouri, funding needs and funding options. Dr. Jerry Wade facilitated the meeting with the assistance of Alice Geller (DNR). After brief opening remarks by Roger Randolph, Director of the Solid Waste Management Program, Dr. Wade reviewed the meeting agenda and went over the rules of engagement for the meeting.

Agenda

- I. Opening (Roger Randolph) - synopsis of last meeting
- II. Information on Solid Waste Programming
 - A. DNR's broad budget situation presentation (Gary Heimericks)
 - B. Overall progress made in solid waste management since Senate Bill 530 (Dennis Hansen)
 - C. EIERA's Market Development Program (Kristin Allan)
 - D. DNR project grants (Stan Putter)
 - E. Solid Waste Management Districts (Lynda Roehl)
- III. Basic Solid Waste Management Programming for the State – What & Who
- IV. Funding Recommendations

The meeting proceeded with Item II. on the agenda; *Information on Solid Waste Programming*. Individuals identified in the agenda made presentations. Copies of the presentation materials are attached and are referenced by the agenda item heading.

After the presentations and lunch, the meeting proceeded with Item III. on the agenda; *Basic Solid Waste Planning of Programming of the State – What & Who*. To begin, Dr. Wade reviewed with the stakeholders basic assumptions (below) that developed from the September 23-24 stakeholder meeting. Dr. Wade described how these assumptions were derived and how they worked within the framework of the work group tasks.

Basic Assumptions

1. State's Solid Waste Efforts will be totally fee based
2. Total solid waste management efforts
3. Plan driven – from the bottom up
4. Honest and Transparent

After Dr. Wade's discussion, a matrix of solid waste management activities was handed out.

Matrix of Solid Waste Management Activities

The matrix of solid waste management activities which stakeholders evaluated during the September 23-24 meeting was handed out. The stakeholders indicated during the September meeting whether they viewed each action as "Essential," "Important," or "Not Necessary." The choices made by each of the nine tables of stakeholders were tallied and are found in the corresponding column of the revised matrix (see attached). Department staff looked at the tallies to help select activities which make up core solid waste functions.

The first step was to select all Actions which half or more of the tables gave a rating of "Essential." This means that Actions with a tally of 4.5 or greater in the **Essential** column are labeled as "Essential" in the **Rating** column.

Next, the Actions were selected which half or more of the tables gave a rating of "Not Necessary." So all Actions with a tally of 4.5 or greater in the **Not Necessary** column are labeled as "Not Necessary" in the **Rating** column.

The actions which remain would be "Important" – but this included such a great number of the actions that staff devised a way to represent the degree of importance. Some of these Actions were rated as "Essential" by one or more of the tables. Since a rating of "Essential" was the highest rating possible, two points were assigned to each tally in the **Essential** column. By adding this score to the tally in the **Important** column, staff were able to show the degree of importance for each action. For example, an Action with a tally of two in the **Essential** column and three in the **Important** column would have a total calculated value of seven ((2x2)+3). An Action with a tally of five in the **Important** column and none in the **Essential** column would have a total calculated value of five. This allows the "Essential" rating given by participants to weight the "Important" rating where applicable.

The result of assigning two points to each tally in the **Essential** column and adding it to the tally in the **Important** column is shown in the **Calculated Value** column. Actions with a calculated value of 4.5 – 6.5 were then labeled as "Important" in the **Rating** column; actions with a calculated value of 7 or greater were labeled "Critically Important" in the **Rating** column.

After a discussion about the matrix the SWMP provided the work group with a cost estimate for the department to conduct the essential and critically important activities identified in the matrix (see attached). The SWMP indicated that along with SWMP central office activities including the waste tires unit, cost estimates included work being conducted by the department's regional offices, Geological Survey Resource Assessment Division (GSRAD), the Environmental Services Program (ESP) and the Outreach and Assistance Office (OAC). The group decided that it did not want the "Waste Tires" to be considered in the total cost estimate. Removing "Waste Tires" activities reduced the cost estimates to approximately \$4.4 million.

The group also discussed its concern regarding what were considered core functions. The discussion lead into what activities should be considered that could only be effectively done by the DNR. These activities were those falling under the "Safe Disposal Practices" item. These

activities are typically conducted by the enforcement and engineering sections of the SWMP, the ESP, the department's regional offices, environmental investigators, GSRAD and the Attorney General's Office. The SWMP's Planning and Financial Assistance Section is largely responsible for all remaining activities identified in the matrix. The group thought it important to examine the remaining solid waste activities to determine where these activities could be done most effectively.




The meeting moved into Item IV on the agenda; "*Funding Recommendations.*" The workgroup members were polled to judge their overall support for DNR funding, stakeholders were to indicate if they support (thumb up), could live with (thumb horizontal) or opposed (thumb down). The following chart shows the resulting output of the poll and workgroup suggestions regarding the issue.

Current DNR Funding




1. A strong likelihood that the law will be opened up during the coming legislative session.

The group agreed that this was a true statement. However, the group did not make a recommendation to open the legislation. There were mixed sentiments on that. However, the group felt it needed to be prepared for the inevitable.




2.

CHART I			
	Thumbs Up (in favor of)	14	Approximately \$4.4 million to support solid waste core functions with an examination of who does what – i.e. where functions can be best done. ("Essential" & "Critically Important" = Core Functions)
	Thumbs horizontal (can live with it)	2	
	Thumbs Down (against)	6	

a.

	Thumbs Up (in favor of)	10	\$1.2 million Solid Waste functions
	Thumbs horizontal (can live with it)	9	
	Thumbs Down (against)	2	

b.

	Thumbs Up (in favor of)	20	\$3.2 million towards solid waste permit & enforcement (review effective/efficient)
	Thumbs horizontal (can live with it)	1	
	Thumbs Down (against)	0	

Discussion:

1. Suggest breaking out the solid waste functions to show regulatory efforts clearly
2. Suggest – this is a redistribution rather than a reduction.

The following provides additional information and discussion regarding the items referenced under “*Current DNR Funding*” in **CHART I**.

2.a. *The \$1.2 million would provide sufficient funding to “core functions of solid waste reduction and diversion activities currently being done by the department.” The group did not agree on what activities could or should be done by the department or if they should be done by other entities such as the districts.*

2.b. *The \$3.2 million would provide sufficient funding to fully support solid waste permitting and enforcement activities. A review should be conducted to ensure activities are performed as efficiently and effectively as possible. There was strong support by the group for this item.*

Obtaining Input from Each Table Group

The work group then discussed funding scenarios for the Environmental Improvement and Energy Resources Authority (EIERA). The work group divided into five table groups. Each table discussed possible funding scenarios. Three of the tables provided ideas and discussion points about distributing the funds. Two tables provided discussion points but did not offer a funding distribution scenario, nor did they offer support for the current fund distribution. The following chart and discussion points are the output from the activity.









CHART II				
	Current Distribution	Ideas for new distribution of approximately \$11,000,000 annually from each		
EIERA	Up to 10%	\$500,000 Does <u>not</u> provide HHW funding	Up to 10%	Share \$1.3 million
DNR	Up to 25% of remaining monies after EIERA portion removed	\$4 to 4.5 million Does provide HHW funding (\$150,000)	\$4.4 million Look at who does what	\$4.4 million
Solid Waste Management Districts	At least 50% of remaining monies after EIERA portion removed	At least 50% of fund after EIERA portion removed	At least 50% of remaining monies after EIERA portion removed \$5.2 million (53-55%)	\$5.4 million (51-52%) Provides \$400,000 for SWMD admin
State Project Grants	All remaining monies (usually up to 25%)	\$500,000-700,000	Provides \$400,000 for SWMD admin	Share \$1.3 million Does <u>not</u> provide \$400,000 for SWMD admin

Discussion Points

1. Need more discussion of what EIERA and Districts are and should be doing
2. More work on how to do
3. Project grants diverted to DNR and Districts
4. We must have a plan.
5. \$4.4 million DNR activities are critical. (Some items could/should be done by districts)

The workgroup members were polled using the thumb-point process to judge their overall support for each proposal. The following chart shows the resulting output of the poll for EIERA funding.







EIERA

CHART III			
	Thumbs Up (in favor of)	6	\$500,000 without HHW funds
	Thumbs horizontal (can live with it)	2	
	Thumbs Down (against)	9	
	Thumbs Up (in favor of)	7	\$1,000,000 with HHW funds
	Thumbs horizontal (can live with it)	5	
	Thumbs Down (against)	6	
	Thumbs Up (in favor of)	1	\$650,000 without HHW funds
	Thumbs horizontal (can live with it)	13	
	Thumbs Down (against)	3	

HHW funding = \$150,000

The workgroup then deliberated on the percentage of funding for the Solid Waste Management Districts (SWMD). The workgroup members were polled using the thumb-point process to judge their overall support for two proposals. The following chart shows the resulting output of the poll.

SWM DISTRICTS

CHART IV			
	Thumbs Up (in favor of)	12	Not less than 55% (includes District Admin \$400,000)
	Thumbs horizontal (can live with it)	3	
	Thumbs Down (against)	3	
	Thumbs Up (in favor of)	9	Not less than 50% plus additional \$400,000 for District Admin
	Thumbs horizontal (can live with it)	10	
	Thumbs Down (against)	2	
Balance after any distribution goes to Project Grants			

A discussion item was brought up by a SWMD representative to keep the \$400,000 district administration grant within the project grant distribution so as not to draw attention to the additional funding the districts received for administration.

A fund distribution model was shown for each of the scenarios (attached). These scenarios include the breakout distribution shown in items 2.a. and 2.b. of **CHART I**.

Discussions continued regarding fee distribution. The last activity of the workgroup culminated with the following concepts having been discussed:

1. The EIARA to receive \$650,000 of tonnage fee revenues. The \$150,000 amount for Household Hazardous Waste would not come from the EIARA allocation but from the DNR portion.
2. Of the remaining revenues, an amount of approximately \$4.4 million dollars would be allocated to support solid waste core functions. While the group viewed permitting and enforcement as department activities, they felt that certain core solid waste functions would need to be examined to determine who best should carry them out. Household hazardous waste will also be paid out of this portion.
3. Not less than 50 percent of the tonnage fee revenues of the remaining revenues would be allocated to the districts for grants. An additional \$400,000 would be allocated to the amount for district operational grants.
4. Remaining revenues would be available for state project grants.

This report was provided to Steve Mahfood, Director of DNR, for his review and consideration in development of draft legislation regarding the solid waste management fund.

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SOLID WASTE LAW ADVISORY GROUP MEETING
OCTOBER 8, 2003**

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MATRIX OF SOLID WASTE MANAGEMENT ACTIVITIES

Key for Organizational Responsibility:	
1	= This work is currently being done by the responsible party
1*	= This work is currently being done by the responsible party, but more effort could be put into this issue.
2	= Identified by the Stakeholders, but is not being done by the responsible party
3	= Not identified by the Stakeholders, but this work is currently being conducted.

Key for Evaluation:	
Rating Column - Each action is given a rating based on the input provided by stakeholders Sept. 23-24. Stakeholders were divided into 9 groups, giving each category a possible tally of 0-9	How Rating was assigned:
	Essential = A tally of 4.5 or greater in the "Essential" column
	Important = A "Calculated Value" of 4.5 – 6.5
	Critically Important = A "Calculated Value" of 7 or greater
	Not Necessary = A tally of 4.5 or greater in the "Not Necessary" column
Essential Column = Total points given by stakeholder group on Sept. 23-24	
Important Column = Total points given by stakeholder group on Sept. 23-24	
Calculated Value Column = 2 points for each "Essential" tally plus the tally for "Important"	
Not Necessary Column = Total points given by stakeholder group on Sept. 23-24	

Stakeholder Recommendations & Department Activities ↓	Organizational Responsibility						Evaluation				
	SWMP Enforcement & Regional Office Solid Waste Staff	SWMP Engineering	SWMP Planning & Financial Assistance	EIERA Market Development Program	DNR Outreach & Assistance Center	Other DNR	Rating	Essential	Important	Calculated Value	Not Necessary

EDUCATION FOR ALL											
Schools:											
Conduct Solid Waste Management workshops for In-Service teachers			3		3		Critically Important	3	5	11	1
Integrate solid waste environmental education into all classrooms (Pre-K - 12, MAP)			1*		1		Critically Important	2	6	10	1
Develop uniform solid waste environmental education standards and programs			1*		2		Not Necessary	1	2	4	6
Offer solid waste management courses in adult education			2		2		Not Necessary	0	3	3	6
Develop & distribute traveling recycling bins to provide hands-on materials for student learning.			3		3		Not Necessary	0	3	3	6
Set up state agency committee to reach schools			1*				Not Necessary	0	1	1	8
Require one solid waste environmental education course in post-secondary education			2		2		Not Necessary	0	0	0	9

Stakeholder Recommendations & Department Activities ↓	Organizational Responsibility						Evaluation				
	SWMP Enforcement & Regional Office Solid Waste Staff	SWMP Engineering	SWMP Planning & Financial Assistance	EIERA Market Development Program	DNR Outreach & Assistance Center	Other DNR	Rating	Essential	Important	Calculated Value	Not Necessary

EDUCATION FOR ALL (continued)											
Public/Business/Other:											
Maintain lists of recycling center locations and waste destinations	1	1	1	1*		1	Essential	6	3	15	0
Use public ad campaign to promote 3 R's			2				Critically Important	2	6	10	1
Increase local awareness of availability recovery sites			1*	1*			Critically Important	3	4	10	1
Educate purchasers and vendors about the cost/benefits of recycled content products			3	3			Critically Important	1	7	9	1
Provide information on Missouri's annual waste diversion progress			3				Critically Important	1	6.5	8.5	1.5
Provide information on how to reach targeted waste reduction goals	1	1	1	1	1		Critically Important	1	6	8	2
Train community leaders to educate others on the 3 R's	1*		1*		1		Critically Important	0	8	8	1
Produce and distribute directory of recycled-content products				3			Critically Important	1	5	7	3
Create a mechanism for sharing best practices	1*	1*	1*	1			Critically Important	2	3	7	4
Provide information on Missouri's annual recycled newsprint usage			3				Important	1	4.5	6.5	3.5
Consumer education to demand less packaging			1*		1		Not Necessary	1	2.5	4.5	6.5
Distribute results of Missouri Public Opinion Survey on Solid Waste			3				Not Necessary	0	3.5	3.5	4.5
Set up state agency committee to reach businesses and manufactures			1*	1*			Not Necessary	0	2	2	7
Sponsor state CEO summit to educate business leaders			2				Not Necessary	0	2	2	7
MANAGING WASTE AS A RESOURCE											
For All Solid Waste Streams											
Incentives:											
Streamline the process for allowing Bioreactor Landfills and Methane recovery for energy		1*					Critically Important	1	7	9	1
Tax incentives for co-collection, renewable energy, recycling, research & development			1*				Critically Important	3.5	1.5	8.5	4
Huge recognition programs for waste reduction			1*	1*	1		Critically Important	1	5	7	4
DNR & DED form task force to identify incentives to support economic growth and sound waste management practices			1*	1			Important	1	3	5	4
Research bottle deposits for legislative proposals			1				Not Necessary	0	1	1	8

Stakeholder Recommendations & Department Activities ↓	Organizational Responsibility						Evaluation				
	SWMP Enforcement & Regional Office Solid Waste Staff	SWMP Engineering	SWMP Planning & Financial Assistance	EIERA Market Development Program	DNR Outreach & Assistance Center	Other DNR	Rating	Essential	Important	Calculated Value	Not Necessary

MANAGING WASTE AS A RESOURCE - All Solid Waste Streams (continued)											
Financial Assistance:											
Financial assistance for start-ups (recycling) or venture businesses			1	1			Critically Important	3	6	12	0
Use federal funds for grants for solid waste research and development	1	1	2	1			Critically Important	0	8	8	1
Use state funds for grants for solid waste research and development			1	1			Critically Important	0	7	7	2
Commercially viable recycling industry through venture capital from government (& communities & industry)			1*	1*			Important	1	3	5	2
Funding for all solid waste programs and activities	2	2	2	2	2		Not Necessary	2	2	6	5
Technical Assistance:											
Promote local government supported waste reduction programs			1*	1*			Critically Important	2	7	11	1
Promote model programs and best practices for reducing waste, recycling and composting	1*	1*	1*	1*			Critically Important	0	7	7	1
Model contracts for solid waste services that provide \$ incentives for waste reduction & recycling			1*				Important	0	5	5	4
Promote and increase the use of waste for energy	1	1*	1*	1*	1		Important	0	5	5	3
Through coordination between the department, business, industry & solid waste organizations, create a database & clearinghouse of information & resources for commercial & residential solid waste management	1*	1*	1*	1*			Important	0	4.5	4.5	3.5
Create solid waste management cross-department databases			2	1			Not Necessary	2	1	5	4.5
Promote mutual goals, objectives and programs to achieve an adaptive reuse market/economy	1*		1*	1*			Not Necessary	1	2	4	6
Standardize collection services (Environmentally sound and full service for everyone)	2		2				Not Necessary	0	3	3	5
Public/private partnerships to provide technical support and fund stakeholder training	1*	1*	1*	1*			Not Necessary	0	3	3	6
Require municipalities to develop a SWM plan			1				Not Necessary	0	3	3	5
For Residential Waste											
Incentives:											
Local government provide incentives to create material recovery facilities (state/local issue)			1				Important	0	5	5	4
Financial Assistance:											
Financial assistance for communities and private haulers for volume-based collection programs (Pay-as-You-Throw) or co-collection			1				Not Necessary	0	3	3	5

Stakeholder Recommendations & Department Activities ↓	Organizational Responsibility						Evaluation				
	SWMP Enforcement & Regional Office Solid Waste Staff	SWMP Engineering	SWMP Planning & Financial Assistance	EIERA Market Development Program	DNR Outreach & Assistance Center	Other DNR	Rating	Essential	Important	Calculated Value	Not Necessary

MANAGING WASTE AS A RESOURCE – Residential Waste (continued)											
Technical Assistance:											
Provide guidance and training for Pay-As-You-Throw programs and full cost accounting			1*				Critically Important	0	7.5	7.5	1.5
Help improve collection efficiency to minimize recycling costs			1*				Important	0	6	6	2
Partnerships:											
Create partnership between Education – Social Services – Recycling communities	1*		1*				Not Necessary	0	2	2	5.5
For Institutional Waste											
Use waste audits to evaluate current programs and find opportunities to increase diversion			1*	1*			Critically Important	2	6	10	0
Promote and increase the use of waste exchange and reuse programs			1*	1*			Critically Important	1	7.5	9.5	1.5
Provide technical support to increase recycling and reduce waste in state government			3	3	3		Critically Important	3	2	8	3
State develops model procurement policies & contracts for institutions to support closed loop markets			1*	1*			Critically Important	0	7	7	2
DNR is responsible for developing recycling programs for all state offices			1*	1*			Not Necessary	3	1	7	5
Form public/private partnerships to provide technical support and fund stakeholder training	1*	1*	1*	1*			Not Necessary	1	2	4	6
For Commercial and Industrial Waste											
Incentives:											
Streamline regulations/permits to make it easier to use by-products as resources (e.g. cement kilns)	1*					1*	Critically Important	3	4	10	2
Create tax incentives for business and industry to use recyclables			1*	1*			Critically Important	2.5	3.5	8.5	3
Rewards and recognition to foster cooperation between industry and government			2		1		Critically Important	0	7	7	2
Economic development dollars tied to resource management			1*	1*			Important	0	5	5	3
Create a state in-kind gift receipt to qualify for tax deductible charitable contribution when materials are given to reuse programs							Not Necessary	1	0	2	8
Financial Assistance:											
Develop financial incentives for closed-loop markets			2	1*			Important	0	5	5	4
Financial assistance for business subsidies to encourage use of recycling markets (crop subsidies model)			2				Not Necessary	0	3	3	6
Technical Assistance:											
Promote the use of waste audits to evaluate solid waste systems and determine opportunities to increase diversion			1	1*	1		Critically Important	1	8	10	0

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MANAGING WASTE AS A RESOURCE – Commercial and Industrial Waste, Technical Assistance (continued)											
Increase the use of industrial waste exchanges			1*	1*			Critically Important	1	7	9	1
Promote the development of eco-industrial parks which enable industry to take advantage of waste and product streams and reduce hauling costs			2	2	2		Critically Important	0	7	7	2
Provide environmentally sound business planning assistance			1*	1*			Critically Important	0	7	7	2
Work with manufacturing to create "less wasteful" packaging			2	1*			Critically Important	1	5	7	3
Increase business/industry donations of by-products to teacher reuse/recycle centers			1*				Not Necessary	0	4	4	5
Create a government facilitation unit which initiates outreach to industry and responds to industry request for assistance			1*	1	1		Not Necessary	0	2	2	7
Deposits on packaging for return system			2				Not Necessary	0	1	1	8
Partnerships:											
Use industry representatives to promote recycling and source separation techniques	2		2		2		Critically Important	2	6	10	1
Partner with industry to promote recyclable and reusable products			1*	1*	1		Critically Important	1	7	9	1
Partner with industry to establish new packaging alternatives			2	1*			Critically Important	1	6	8	2
Obtain statewide industry commitment to product life cycle initiatives			2	2	2		Important	0	6	6	3
For Construction & Demolition Waste											
Incentives:											
Create financial/other incentives for building deconstruction and bulk material recycling		1	1*	1*			Critically Important	1	5	7	4
Promote the financial and other incentives for historic preservation			2		1		Important	0	5	5	4
Recognition/awards for historic preservation			2		1		Important	0	5	5	4
Create financial/other incentives to design and construct buildings according to LEED standards			2			2	Important	0	4.5	4.5	3.5
Local government provide incentives to source separate on construction and demolition site or at landfill	1*		1*				Not Necessary	0	3	3	6
Local govts create new tax incentives for C&D waste removal and reuse that is environmentally friendly							Not Necessary	0	2	2	7
Technical assistance:											
Promote and increase construction material waste exchange and reuse programs			1*	1*			Critically Important	2	6	10	1

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MANAGING WASTE AS A RESOURCE – Construction & Demolition Waste, Technical Assistance (continued)											
Develop inexpensive alternative building materials with aesthetic performance equal to traditional building materials	1*	1*	1*	1*			Critically Important	0	7	7	2
Information summary for all building construction to highlight available incentives on environmental building technologies/efficiency							Important	0	5	5	4
Feasibility/economic impact study for C&D projects	1*			1*			Not Necessary	0	4	4	5
Recycling Market Development											
End-use market development & feasibility analysis			1	1			Critically Important	2	7	11	0
Promote creation of more recycled products, including analysis of produce feasibility			1*	1			Critically Important	2	6	10	1
Promote the creation of jobs through the use of recovered materials in manufacturing				3			Critically Important	2	6	10	0
Promote the purchasing of recycled-content products by individuals, businesses, institutions and government offices	1*	1*	1*	1*			Critically Important	2	6	10	1
Assist manufacturers with locating sources of recycled-content feedstock				3			Critically Important	1	7	9	1
Help manufacturers of recycled products adopt technologies, change processes or select equipment to help increase efficiency, productivity and profitability			1	1			Critically Important	1	6	8	2
Conduct periodic review of recyclable material(s) marketability			1*	1*			Critically Important	0	7	7	2
Provide business planning assistance to recycling-related businesses				3			Important	1	4	6	4
Create financial and other incentives for market development and publicity	1*		1*	1			Important	0	6	6	3
Financial assistance to support struggling end markets with potential, for new market research and development, for advertising recycling products, and for business subsidies to encourage use of recycling markets	1		1*	1			Not Necessary	1	3	5	5
Provide marketing assistance to recycling-related businesses, including web development and training				3			Not Necessary	1	3	5	5
SAFE DISPOSAL PRACTICES											
Permitted Facilities											
Issue permits for sanitary, demolition, special waste, and utility waste landfills; ensure compliance with federal and state requirements designed to ensure that the location, design, construction & operation of solid waste facilities is protective of the environment & public health	3	3					Essential	9	0	18	0

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SAFE DISPOSAL PRACTICES - Permitted Facilities (continued)											
Issue permits for transfer stations, infectious waste facilities, material recovery facilities, co-composting facilities and solid waste incinerators; insure compliance with federal and state requirements designed to insure that the location, design, construction & operation of solid waste facilities is protective of the environment & public health		3					Essential	9	0	18	0
Conduct video surveillance of illegal dumps in order to identify violators and collect evidence of illegal dumping	3						Essential	5	3	13	0
Investigate and conduct enforcement actions against permitted solid waste facilities that fail to comply with state law and regulations	3						Essential	9	0	18	0
Provide opportunities for public involvement in the permitting process through coordination of public hearings and public awareness sessions		3					Essential	8	1	17	0
Allow location, design and operational flexibility in solid waste facilities through the approval of special permit conditions or modifications to existing facilities.		3					Essential	7	2	16	0
Review a solid waste facility applicant's history of violations to determine if the misconducts are within the limits of the Missouri Solid Waste Management Law.		3					Essential	7	2	16	0
Ensure that the permit applicant provides funds or an acceptable financial assurance instrument so that the facility can be properly closed at any time and ensure that they have plans and materials in place to do so.		3					Essential	7	2	16	0
Review and monitor facility closure plans and activities, including methane gas control and groundwater monitoring at facilities in closure mode.		3					Essential	7	2	16	0
Provide oversight of new landfill cell construction, including site visits and inspections.		3					Essential	7	2	16	0
Provide oversight of the design and operation of groundwater monitoring systems and methane gas control at permitted landfills	3	3					Essential	7	1	15	1
Meet with facility representatives, consultants, attorneys, governmental entities, and other regulatory representatives to coordinate, resolve issues, initiate and continue remedial activities, and settle violations	3						Essential	5	4	14	0
Provide technical assistance and guidance to the solid waste management industry, as requested, to ensure solid waste is managed in compliance with state law and regulations	3	3	3	3	3	3	Essential	6	2	14	1
Provide policy oversight to regional office solid waste inspections of permitted facilities to ensure completeness, statewide consistency and facility compliance	3						Essential	6	1	13	2

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SAFE DISPOSAL PRACTICES - Permitted Facilities (continued)											
Arrange for and evaluate Quality Assurance/Quality Control split sampling at landfills	3	3				3	Essential	5	2	12	2
Promote waste collection services for all areas of counties (green boxes)			1*				Critically Important	2	4	8	2
Include energy use plans in new landfill permits		2				1*	Critically Important	0	7	7	2
New Technologies											
Investigate and evaluate methane gas migration from landfills; require or take necessary actions to protect public safety and health	3	1*					Essential	6.5	2.5	15.5	0
Research and develop innovative ways to properly close and maintain old landfills that do not have financial assurance instruments that allows for the proper closure of the landfill	3	1*					Critically Important	4	4	12	1
Design future landfills as planned resource recovery facilities		2	2			2	Critically Important	4	3	11	2
Support engineering, enforcement and planning activities by utilizing the Geographical Information System (GIS) to accurately map and document permitted solid waste facilities and unpermitted dumps	3						Critically Important	1	6	8	2
Landfill Mining research		2					Not Necessary	3	1	7	5
Illegal Dumping Enforcement and Prevention											
Investigate and conduct enforcement actions against entities responsible for illegal dumping to discourage and prevent future illegal dumping	1						Essential	9	0	18	0
Ensure that infectious (pathogenic) waste is properly managed and treated or disposed of to prevent illegal dumping and contamination of water and land resources	3						Essential	7	2	16	0
Assisting local governments to develop their own illegal dumping enforcement programs to maintain enforcement activities at the local level for closer regulation of solid waste management laws	3						Essential	5	4	14	0
Conduct video surveillance of illegal dumps in order to identify violators and collect evidence of illegal dumping to be used in criminal prosecutions; working with local law enforcement agencies and county prosecutors to utilize collected evidence to require dump cleanups and collect fines as well as discouraging and preventing future illegal dumping	3						Essential	5	3	13	0
Building and reconstruction permits require environmental aspect before issued	1*					2	Critically Important	2	4	8	2
Technical Assistance											
Respond to questions on how to disposal of railroad ties, CCA lumber, dead animals, and other unusual waste streams.	3	3					Essential	6	3	15	0

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SAFE DISPOSAL PRACTICES - Technical Assistance (continued)											
Provide information to the public, regulated community, legislators and others concerning permitting requirements.	3	3					Essential	6	3	15	0
Design and implement procedures to close abandoned or uncontrolled disposal areas to prevent groundwater contamination, methane migration and other environmental pollution.	3	3					Essential	6	3	15	0
Providing technical assistance and guidance to businesses, governments, and individuals regarding solid waste issues as requested to encourage sound environmental decisions	1	1	1	1	1		Essential	5	4	14	0
Respond to requests for information and technical guidance on infectious waste, post closure land use and special waste issues e.g. airport expansion or disaster debris management	3	3					Essential	5	4	14	0
Engineering input for enforcement activities		3					Essential	6	2	14	1
Review and monitor closure plans and activities	3	3					Essential	5	3	13	1
Landfill remediation tech assistance and actual on-site work	3	3					Critically Important	3	4	10	2
Resource management tied to health and safety	1	1	1				Critically Important	2	4	8	2
SPECIAL SOLID WASTE ISSUES											
Household Hazardous Waste (HHW)											
Provide technical assistance regarding proper disposal of HHW			3		3	3	Critically Important	4	4	12	1
Provide technical assistance regarding alternative products					3		Critically Important	3	4	10	2
HHW - Elemental Mercury (Hg)											
Provide information regarding Hg in the solid waste stream			3		3	3	Critically Important	3	5	11	1
HHW - Electronic Waste											
Provide technical assistance regarding recycling and reuse of electronic waste			3	3	3	3	Critically Important	3	6	12	0
Organics:											
Provide technical assistance regarding alternatives to landfilling organic materials		3	3	3	3	3	Critically Important	2	7	11	0
Items banned from Missouri landfills											
White Goods (WG):											
Assist small businesses that want to collect WG by streamlining regulatory process		2			2	2	Critically Important	2	5	9	2

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SPECIAL SOLID WASTE ISSUES - Items banned from Missouri landfills, White Goods (continued)											
Provide additional information/education materials regarding WG recycling			1*	1*			Critically Important	0	8	8	1
Encourage Solid Waste Management Districts to conduct WG Collections			1*				Critically Important	2	4	8	3
Encourage better end markets for scrap metal			2	2			Critically Important	1	5	7	3
Encourage reuse and repair of WG			1				Critically Important	1	5	7	2
Provide funding for freon extraction certification and equipment			2				Not Necessary	2	2	6	5
Create a fee system to subsidize WG recycling and illegal disposal cleanup	2		2				Not Necessary	1	2	4	6
Lead-Acid Batteries:											
Provide technical assistance regarding lead-acid battery management			3		3		Critically Important	1	5	7	3
Used Oil:											
Provide technical assistance and information regarding used oil			3		3		Critically Important	1	6	8	2
Yard Waste:											
Provide technical assistance regarding yard waste composting regulation		3	3	3	3	3	Critically Important	1	5	7	3
Provide technical assistance regarding yard waste composting			3	3	3		Important	0	6	6	3
Waste Tires											
Waste Tire Processors and Sites, Collection Centers and Waste Tire Haulers											
Require permits for waste tire sites, processors and haulers	3						Essential	7	2	16	0
Enhance established controls for permitting, enforcement and inspections	1						Critically Important	2	4	8	3
Address the waste tires that are not accounted for through the existing infrastructure (5%) by enhancing the tracking system	1*						Important	1	3	5	4
Increase collection center inspections	2					2	Important	0	3	3	4
Ensure that tire collection centers (tire stores, service stations, salvage yards, etc.) are properly managed (preventing vermin/ fire hazards) and are recycling or disposing of tires	3						Essential	5	3	13	1
Illegal Waste Tire Dump, West Nile Virus and Tire Fire Prevention:											
Conduct inspections and enforcement actions against violators the Waste Tire Law	1						Essential	9	0	18	0
Assist local governments with waste tire control efforts and illegal dump cleanups	1*				1		Essential	7	2	16	0

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SPECIAL SOLID WASTE ISSUES - Waste Tires, Illegal Waste Tire Dump, West Nile Virus and Tire Fire Prevention (continued)											
Provide monetary assistance for cleanup of innocent party tire dumps statewide to prevent mosquito borne illnesses and the proliferation of vermin	1						Essential	6	2	14	1
Reimburse non-profit groups for their waste tire cleanups to encourage citizen participation in the maintenance of our environment and to educate the public	1						Critically Important	4	5	13	0
Provide technical assistance to the public, legislators and other officials, tire retailers and recyclers	1			1	1		Critically Important	4	5	13	0
Provide information on tire fire prevention through the Response to Tire Fires Technical Bulletin	1				1		Critically Important	2	5	9	1
Disseminate the Management of Waste Tire Technical Bulletin on how to prevent tires from becoming mosquito breeding grounds and nurseries	1				1		Critically Important	3	3	9	2
Offer incentives to property owners who self-report their tire dumps to sign innovative settlement agreements	1						Critically Important	3	3	9	3
Waste Tire Recycling and Market Development:											
Encourage power plants to use tire derived fuel, lowering their emissions and using more tires	1*					1*	Critically Important	4	4	12	1
Coordinate with other state agencies and industry to introduce more waste tire-derived materials in their projects and the use of waste tires in civil engineering applications	1*			1*			Critically Important	3	6	12	1
Promote landfill projects using waste tire material as a liner protections layer, in leachate and methane gas collection systems and as a drainage layer under final cover	1*	1*					Critically Important	4	3	11	2
Promote the use of waste tire material in highway construction as lightweight fill and drainage	1*			1*			Critically Important	3	5	11	1
Provide grants for schools, parks, other non-profit entities to purchase playground cover made from tires to protect children from injuries from falls	1						Critically Important	2	5	9	2
Promote the use of rubberized asphalt with state and local agencies and paving contractors	1*	1*		1*	2		Critically Important	2	5	9	2
Promote the using rubberized asphalt and the use of crumb rubber in the manufacture of new products	2			1	2		Critically Important	1	6	8	2
Augment market development via Waste Tire Grant Program	1*			2			Critically Important	1	5	7	2